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KOCH NITROGEN COMPANY LLC

December 7, 2012

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 Air, RCRA and Toxic Division  
 U.S. Environmental Protection Agency – Region VII  
 11201 Renner Boulevard  
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Andrea R. Stone (Electronic copy on CD)  
 Environmental Scientist  
 RCRA Corrective Action & Permits Branch  
 Air, RCRA and Toxics Division  
 U.S. Environmental Protection Agency Region VII  
 11201 Renner Boulevard  
 Lenexa, Kansas 66219

**RE            Response to EPA November 21, 2012 Approval w/ Comment to the Phase II  
 RFI Work Plan Addendum: Tier II Soil Plan  
 Koch Nitrogen Company, LLC  
 Dodge City, Kansas  
 EPA RCRA ID No. KSD044625010**

Dear Ms. Stone:

This letter and associated attachments are provided to address comments provided by the EPA in its approval with comments to Koch Nitrogen Company, LLC's (KNC's) revised Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan Addendum: Tier II Soil Sampling Work Plan and Letter, dated July 26, 2012. The purpose of this letter is to transmit the text, table, and figure revisions requested by the EPA and address, as applicable, each of EPA's comments.

EPA's comments and KNC's responses are provided in Attachment A. Requested replacement pages are provided in Attachment B. Attachment C provides revised figures associated with the main document. Revised figures provided in the appendices of the RFI Work Plan Addendum: Tier II Soil Sampling Work Plan are provided for replacement in Attachment D. The table revision replacement pages are provided in Attachment E.

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We appreciate your time in this matter and look forward to mobilizing to begin field activities, based on your previous approval, this spring. Please call Elise Stucky-Gregg at (620) 371-7910 if you have any questions or would like to discuss.

In accordance with Section B.22 of the Part II permit, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or other persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very Truly Yours,



Michael J. Sherbak II  
Plant Manager  
Koch Nitrogen Company, LLC

Cc w/Attachments:

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Elise Stucky-Gregg, KNC, Dodge City, Kansas  
Tom Siegrist, KF, Wichita, Kansas (electronic)  
Warren Brady, Geosyntec, Baton Rouge, Louisiana

**ATTACHMENT A**

**EPA 21 NOVEMBER 2012 COMMENTS  
AND KNC RESPONSES**

RCRA



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## Response to EPA's Comments Dated 21 November 2012

### Project Manager (PM) Comments:

PM Comment 1 - Section 1.2 Approach, Page 2, First Group of bulleted items: Please add a reference to the EPA Regional Screening Levels (RSLs) after volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and sulfate. Please submit a replacement page with changes.

**Response: Comment noted. Reference to the EPA Regional Screening Levels (RSLs) has been added to the description in Section 1.2. Attachment B provides the text revision replacement page.**

PM Comment 2 – Nitrate+Nitrite as N Soil Sampling, Page 4, Last Paragraph: Reference is made to installing three well clusters (MW-27, MW-28, and MW-29) previously identified in the Phase II RFI Work Plan Addendum: Groundwater Characterization (KNC, 2010b) after completion of the deep soil borings at locations S1K(Deep), S2K(Deep), and S2I(Deep). Please add a reference in this section to the Figure where the three well clusters (MW-27, MW-28, and MW-29) will be located/installed. Please submit a replacement page with the changes, and include the new Figure.

**Response: Comment noted. A sentence has been added to the last paragraph of page 4 that reads, "The location of deep borings and monitoring wells is depicted on Figure 4." Attachment B provides text revision replacement pages. Attachment C contains the revised Figure 4 that includes the new well cluster name adjacent to the boring.**

PM Comment 3 - Section 3.0 Chromium Soil Sampling, Page 5, Third Paragraph, Last Sentence: The last sentence states, "These borings will be advanced 4 ft bgs." Four (4) feet bgs will not characterize the vertical and horizontal extent of the hexavalent chromium. In all locations where hexavalent chromium was previously detected and in addition spots check to account for the lower RSL for hexavalent chromium, KNC must define the vertical and horizontal extent of contamination. Please revise this section and the appropriate Figures, and submit replacement pages.

**Response: The depth of soil hexavalent chromium detected in previous borings, outside of AOC-1, was limited to samples collected at 0 to 0.5 and 0.5 to 2 ft bgs. The proposed confirmation borings for these borings were extended to 4 ft bgs to attempt to vertically delineate these previous detections. Based on EPA's comment, KNC proposes to extend the confirmation borings to 10 ft bgs and is aware that concentrations above applicable standards may require additional vertical delineation. Figures C-4, C-5, C-6, and C-22 (provided in Attachment D – Appendix Revisions) have been revised to reflect this change. Table 1 (Attachment E) has also been revised to identify total and hexavalent chromium analyses at these depths.**

**After a review of the hexavalent chromium maps, specifically Figure C-2 in Appendix C, an additional confirmation boring to 10 ft bgs (S1CB5) is proposed in the southern**

portion of the west study area. Modifications to Figures C-1 through C-6 (Attachment D) and the tables (Attachment E) are provided to document these changes as replacement pages.

Hexavalent chromium analyses are proposed for every location where total chromium analyses are proposed in the revised Tier II Work Plan, which should provide sufficient spot checking in additional areas to account for the lower RSL for hexavalent chromium.

PM Comment 4 – *Section 3.0 Chromium Soil Sampling, Page 5, Third Paragraph, First and Second Sentences: Reference is made to deep borings S1KDeep, S2KDeep, and A1GDeep. Please add a reference to this paragraph that identifies the figure(s) where the deep borings will be located. Please submit a replacement page. Please see Geologist’s comment regarding A1GDeep below.*

**Response: Comment noted. A sentence has been added to the last paragraph (after the second sentence) that reads, “The location of these borings and proposed wells is provided on Figure 4.” The replacement text is provided in Attachment B and the revised Figure 4 is provided in Attachment C.**

PM Comment 5 – *Section 6.0 Previously Reported Spills of Recovery Well Water, Page 8: This section describes the previously reported spills. In accordance with KNC’s October 5, 2012 notification of approximately 400 gallons of recovered groundwater from the recovery well piping/header near TW-30. In accordance with the KNC’s Part II Permit, Permit Condition C.4, KNC has notified EPA, and the EPA has determined that this spill/release will need to be investigated. Please add this new spill location to this section (6.0) and show its location on the appropriate Figure. Please revise the appropriate section, figures, tables, and appendices.*

**Response: Comment noted. An additional sentence has been added to page 8 (Attachment B) that reads, “In accordance with EPA’s 21 November 2012 approval letter, the 5 October 2012 spill previously reported to EPA will be assessed under this program, as summarized in Table 2 and depicted in Figure F-11.” Additional information on this spill and the proposed sampling program are provided in revised Tables 1 and 2 (Attachment E), and the proposed sampling program for this area is depicted on new Figure F-11 (Attachment D).**

PM Comment 6 – *Figures: There are sampling locations agreed to in our meeting of June 15, 2012, that are missing on the respective figures. Included below is a Table showing the missing sampling locations. Please revise the appropriate figures with the indicated sampling location(s) and send in the replacement figures for the affected figures.*

Figure	Constituent	Missing Sampling Locations
B-4	Nitrate+Nitrite (as N)	Between S2I and S2F; straight out from the 93.1 level of N.
B-5 and B-6	Nitrate+Nitrite(as N)	Sampling locations S1F was

		agreed to go all the way down. Please add to maps starting with B-7.
B-21 and B-22	Nitrate+Nitrite(as N)	Location S11E is missing from this figure. It was agreed to be located to the right of S11B, at the corner of the lime drying bed.
New Figure B-23	Nitrate+Nitrite(as N)	This figure does not show any sampling locations
C-4 and C-5	Total Chromium and Hexavalent Chromium	On the left side of this map, there is a green dot with 13,000 total chromium (hexavalent chromium not sampled). This location is only shown on these two maps, and that sampling location is not sampled after that. This location needs to be sampled for total and hexavalent chromium all the way down until non-detect to determine why this location is extremely high for total chromium

**Response: Revised figures and/or comment to address the requested revisions listed above are summarized below.**

- **Figure B-4 – Figure has been revised to include this sampling point and is included in Attachment D. Table 1 (Attachment E) has also been revised to reflect the addition of Nitrate+Nitrite as N analysis at his location.**
- **Figure B-5 and B-6 – Figures B-7 through B-13 (Attachment D) and Table 1 (Attachment E) have been revised to reflect this requested modification.**
- **Figure B-21 and B-22 – Figures B-21 and B-22 (Attachment D) and Table 1 (Attachment E) have been revised to reflect his change.**
- **New Figure B-23 – Nitrate+Nitrite as N sampling at location S11E has been added (Attachment D) to add continuity and provide data between depth intervals. This addition has been incorporated into Table 1 (Attachment E).**
- **Figures C-4 and C-5 – KNC acknowledges elevated total chromium at this location and these depths, but notes that at the 8 to 10 ft bgs depth (Figure C-6) that three sampling locations within approximately 20 feet of the elevated total chromium location at 6 to 8 ft bgs were below background levels. The elevated total chromium was from within the landfill. The soil sample from the**

10 to 15 ft bgs depth interval (Figure C-7) from the same boring in the clay material underlying the landfill yielded a total chromium concentration of 15.4 mg/kg. These data would suggest that the 13,000 mg/kg total chromium result has been vertically delineated.

### Geologist Comments

Attachment A, Page 6, Koch Response to Specific Comment 8: *Koch states that they are proposing to advance a deep boring (A1GDEEP) within AOC-1 in order to profile total and hexavalent chromium to groundwater and install a new well. The EPA has several comments on this proposal as follows:*

*Geologist Comment A – The location for A1GDeep is shown on Figure 4. Please also show its location on a larger scale figure of AOC-1 such as Figure 2.*

**Response: Comment noted. A revised Figure 2, which identifies the proposed location of A1GDEEP is provided in Attachment C. Please note that, as discussed during our 15 June 2012 meeting, access in this area is limited due to the presence of above and below-ground structures and KNC may adjust the exact position of this boring as field conditions warrant.**

*Geologist Comment B – Table 1 on page 6 indicates that A1GDEEP will be terminated at 60 feet. If the intention is to convert A1GDEEP to a monitoring well, this should be shown on Table by indicating that soil sampling will be terminated at the water table, and specifying the proposed screened interval for the monitoring well.*

**Response: Comment noted. A footnote has been added to Table 1 (Attachment E) that states, "Boring A1GDEEP will be advanced to the top of the Granerous. Total and hexavalent chromium analyses will be performed with depth until the water table is encountered." To address the EPA's comment regarding well screening, an additional footnote has been added that is consistent with the text provided in Section 3.0 that reads, "Well cluster installation will be performed in accordance with the Phase II RFI Work Plan Addendum: Groundwater Characterization (KNC, 2010b)."**

*Geologist Comment C – For the purpose of a final remedy, one of the EPA's major concerns is to what degree AOC-1 may represent a potential source of chromium in groundwater over time as a result of infiltrating precipitation leaching chromium from the vadose zone and migrating to groundwater. Sampling the vadose zone as proposed in Table 1 will provide valuable information regarding the distribution of hexavalent and trivalent chromium from the near surface where the spills occurred through the entire vadose zone to groundwater. The EPA would recommend that Koch evaluate whether there may be other parameters to evaluate such as oxidation-reduction potential, cation exchange capacity, pH, and other during sampling of the vadose zone that may provide additional information regarding the fate and transport of any additional chromium that may migrate through infiltrating precipitation in the future.*

**Response: Comment noted. KNC is in the process of identifying laboratories to perform specialized analyses to better characterize the fate and transport in both the saturated and vadose zone underlying the site prior to our anticipated early spring field mobilization.**

*Geologist Comment D – The EPA believes the extensive characterization of the distribution of hexavalent and trivalent chromium as proposed by Koch will be very valuable. The EPA believes that locating the borings as close as possible to the largest spill of chromic acid will provide “worst case scenario” information regarding AOC-1 and provide valuable information to support a final remedy decision. The EPA is aware of the problems of locating any borings in AOC-1 due to the active processes in the area as well as the presence of utilities, and is only recommending location the boring near the major spill within the physical constraints of working in this area. Also, it would be very helpful if Koch would also illustrate on the large-scale figure requested above the locations of the historic spills of chromic acid/sodium dichromate.*

**Response: Comment noted. The proposed location of A1GDEEP in revised Figure 2 (Attachment C) represents KNC’s best effort to site this well to meet the EPA’s objective within site constraints. To KNC’s knowledge, the approximate location of chromic acid/sodium dichromate spills by the previous owner are identified in the legend for Figure 2 as follows: i.) Triangle with 3 - Pipe Leak Location; ii) Triangle with 6 - North chromate tank location; and iii.) Triangle with 7 - South chromate tank location.**

**ATTACHMENT B**

**TEXT REVISION REPLACEMENT  
PAGES**

## 1.2 Approach

The analytical data collected during performance implementation of the original RFI Work Plan and Phase II: Tier I soil sampling programs were compared to either site-derived background values, KDHE screening values, EPA Regional Screening Levels, or detection limits in the case of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) to establish threshold values for additional Tier II soil assessment activities. These threshold values were utilized to identify areas where additional delineation is required. The following thresholds were utilized:

- Nitrate + Nitrite as N – 40 milligrams per kilogram (mg/kg) KDHE value for soil below 8 inches;
- Total Chromium – 20.1 mg/kg background value;
- Hexavalent Chromium – 5.6 mg/kg regional screening level (RSL);
- Volatile Organic Compounds (VOCs) and semivolatile organic compounds (SVOCs) – detections; and
- Sulfate – calculated background values for 0 to 0.5 ft bgs (48 mg/kg) and subsurface soil (76 mg/kg).

Appendix A provides a summary of the sulfate background soil sampling results and summary statistics. Soil samples were collected at the locations and using the procedures identified in the Background Assessment Work Plan (KNC, 2005).

The Solid Waste Management Units (SWMUs) were segregated into four major areas (West Study Area, East Study Area, Central Processing Study Area, and Central Storage Area) as depicted in Figure 1 and discussed in our 3 March 2011 meeting. Appendices B, C, D, and E provide depth-specific maps for Nitrate + Nitrite as N, total and hexavalent chromium, sulfate, and VOCs/SVOCs for each of the four study areas depicted in Figure 1, respectively. Each data posting map provides the following information:

- Identification of each SWMU in the area;
- Existing data points for a specific depth interval;
- The concentration reported for each sampling location (concentrations above the threshold are posted as black dots and concentrations below the threshold are posted as yellow dots); and
- Proposed boring locations with a predefined boring ID that generally corresponds with the SWMU it is being used to delineate.

## 2.0 NITRATE + NITRITE AS N SOIL SAMPLING

Appendix B provides a summary of individual depth maps for Nitrate + Nitrite as N in the four study areas with concentration data and proposed boring locations. The overall soil boring program layout was originally generated using Nitrate + Nitrite as N as previous sampling results indicated that Nitrate + Nitrite as N was anticipated to require more lateral and vertical delineation points than other constituents. The borings locations and number of borings were modified based on the results of KNC's 15 June 2012 meeting with EPA and KDHE. Table 1 provides a summary of the sample boring and depths where Nitrate + Nitrite as N analyses are proposed. The majority of soil borings will be completed using a direct push technology (DPT) drilling rig.

Consistent with the EPA's 23 May 2012 comments regarding potential engineering data gaps, analysis for a particular COC in each boring has been extended approximately 4 feet for shallow samples (shallower than 10 feet) or 5 feet for samples deeper than 10 feet. For instance if Nitrate + Nitrite as N was detected above the threshold at 4 to 6 feet below ground surface (ft bgs) but not at 8 to 10 ft bgs, KNC proposes to analyze Nitrate + Nitrite as N in the adjacent delineation boring to the 10 ft bgs depth to eliminate, to the extent possible, the potential for engineered data gaps. This approach has also been utilized for the delineation of other COCs.

Note that borings S1K(Deep), S2K(Deep), and S2L(Deep) are scheduled to be advanced to deeper depths than previous soil sampling programs in the area to aid in the vertical delineation. The boreholes at these locations will be advanced using a roto sonic drilling rig. It is anticipated that these borings will be completed prior to the shallow DPT borings identified in Table 1 in the event that other soil borings require advancement to deeper depths. KNC proposes to install the three well clusters (MW-27, MW-28 and MW-29) previously identified in the Phase II RFI Work Plan Addendum: Groundwater Characterization (KNC, 2010b) after completion of the deep soil borings at locations S1K(Deep), S2K(Deep) and S2L(Deep). Well cluster installation would be performed in accordance with the Phase II RFI Work Plan Addendum: Groundwater Characterization (KNC, 2012b). The location of deep borings and monitoring wells is depicted on Figure 4.

### 3.0 CHROMIUM SOIL SAMPLING

Appendix C provides a summary of individual depth maps for hexavalent and total chromium in the four study areas with concentration data and proposed boring locations. Total and hexavalent chromium analysis are proposed for all soil samples collected, as summarized in Table 1, and the laboratory will be required to meet a limit of quantitation (LOQ) of 5.6 mg/kg for hexavalent chromium analyses.

In addition, hexavalent chromium analysis will be performed at locations where hexavalent chromium was previously detected in SWMU 1 and SWMU-3 to identify the relationship between total and hexavalent chromium with a lower limit of quantitation for hexavalent chromium (5.6 mg/kg). These samples contain the designation CB in the sample name to indicate that they will be used for confirmation, at lower quantitation limits, in suspected areas of elevated hexavalent chromium. These borings will be advanced 4 ft bgs.

Depth profiling of total and hexavalent chromium is proposed for one of the deep borings in SWMU-1 (S1KDEEP), and SWMU-2 (S2KDEEP). A new deep rotosonic boring is also proposed in AOC-1 (A1GDEEP). Like the other deep borings, KNC proposes to install a new well cluster after completion of the deep soil boring and chromium profiling. Well cluster installation would be performed in accordance with the Phase II RFI Work Plan Addendum: Groundwater Characterization (KNC, 2010b). The location of these borings and proposed wells is provided on Figure 4. Figure 2 provides a summary of speciation results for hexavalent chromium in AOC-1 during previous sampling events and shows sample locations that date back to the first studies in this area (PLERI, 1992). As depicted in Figure 2, substantial sampling effort to laterally and vertically profile total and hexavalent chromium in the AOC-1 area has been performed.

## 6.0 PREVIOUSLY REPORTED SPILLS OF RECOVERY WELL WATER

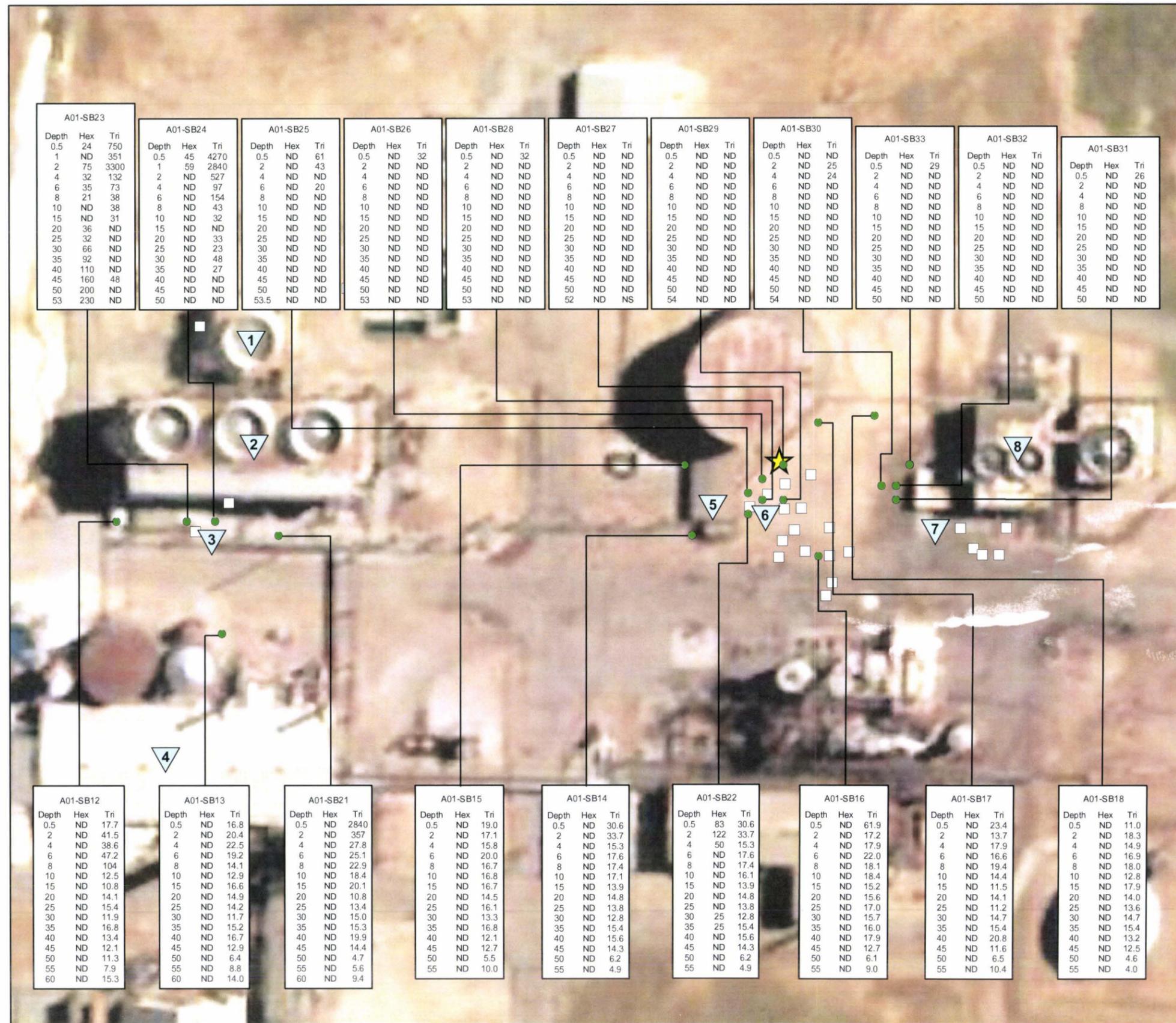
A plan for additional assessment of areas impacted by previously reported spills of recovery well water, which in most cases have been subject to previous assessment work, is summarized in Table 2. Historic spill areas within and to the east of the KNC Facility are identified in Figure 3. To the extent possible, soil sampling locations associated with the SWMU-specific delineation described in Appendix B, C, D, and E are proposed to complete delineation of potential impacts. For areas outside the SWMU-specific assessment areas (e.g, TW-83 Leakage Area and the Pipeline between TW-85 and TW-67), proposed boring location maps are provided in separate figures (Appendix F). Where available; previous sampling results are posted on these figures.

In accordance with the EPA's 23 May 2012 comments, the four new spill areas near TW-82, TW-01A, TW-85, and TW-36 have been added to the assessment program (Table 2 and Appendix F). Two other spills that were reported to the EPA near recovery well TW-19 (letter to EPA dated 13 February 2012) and TW-01A (letter to EPA dated 12 September 2011) after submittal of the Tier II Work Plan. In accordance with EPA's 21 November 2012 approval letter, the 5 October 2012 spill previously reported to EPA will be assessed under this program, as summarized in Table 2 and depicted in Figure F-11. These spill area have also been included in the proposed assessment. Additional information on these spill areas are summarized in Table 2.

For previously reported spill areas the initial drilling program will consist of borings to 6 ft bgs. Soil samples from 0 to 0.5 ft bgs, 0.5 to 2 ft bgs, 2 to 4 ft bgs, and 4 to 6 ft bgs will be submitted for laboratory analysis of Nitrate + Nitrite as N, total and hexavalent chromium at the locations identified in the Appendix F Figures.

**ATTACHMENT C**

**DOCUMENT FIGURE REPLACEMENTS**

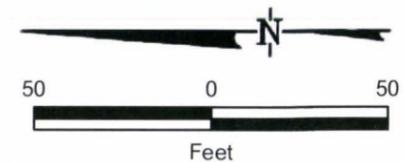


**LEGEND**

- AOC 1 SOIL SAMPLE FROM SOIL INVESTIGATION PHASE I THROUGH PHASE II - TIER 1
- FORMER (1992 AND 2003) SAMPLE LOCATION
- ★ A1G DEEP - PROPOSED DEEP BORING AND NEW WELL CLUSTER
- 1 COOLING TOWER ADDITION
- 2 AMMONIA PLANT COOLING TOWER
- 3 PIPE LEAK LOCATION
- 4 UTILITY PLANT
- 5 FIRE PUMP BUILDING
- 6 NORTH CHROMATE TANK LOCATION
- 7 SOUTH CHROMATE TANK LOCATION
- 8 UAN PLANT COOLING TOWER

**NOTES:**

1. DATA BOXES INDICATE THE CONCENTRATIONS OF HEXAVALENT (Hex) CHROMIUM AND TRIVALENT (Tri) CHROMIUM AT THEIR RESPECTIVE SAMPLE DEPTHS.
2. TRIVALENT CHROMIUM WAS NOT LABORATORY ANALYZED FOR SAMPLES A01-SB12 THROUGH A01-SB22. THE VALUES POSTED WERE CALCULATED BY SUBTRACTING THE HEXAVALENT CHROMIUM VALUES FROM THE TOTAL CHROMIUM VALUES FOR THESE SAMPLES.
3. ALL CONCENTRATIONS = mg/kg.
4. DEPTH UNITS = ft bgs.
5. ND = NOT DETECTED. DETECTION LIMITS FOR HEXAVALENT AND TRIVALENT CHROMIUM = 20 mg/kg.
6. NS = NOT SAMPLED



**DEEP CHROMIUM RESULTS  
IN AOC 1**

PREPARED BY: **KOCH**  
 KOCH NITROGEN COMPANY  
 11559 US HIGHWAY 50 - P.O. BOX 1337  
 DODGE CITY, KS 67801

PROJECT NO.	FIGURE NO. 2
DATE. DECEMBER 2012	FILE NO.

A01-SB23		
Depth	Hex	Tri
0.5	24	750
1	ND	351
2	75	3300
4	32	132
6	35	73
8	21	38
10	ND	38
15	ND	31
20	36	ND
25	32	ND
30	66	ND
35	92	ND
40	110	ND
45	160	48
50	200	ND
53	230	ND

A01-SB24		
Depth	Hex	Tri
0.5	45	4270
1	59	2840
2	ND	ND
4	ND	ND
6	ND	97
8	ND	154
10	ND	43
15	ND	32
20	ND	ND
25	ND	33
30	ND	23
35	ND	48
40	ND	27
45	ND	ND
50	ND	ND
50	ND	ND

A01-SB25		
Depth	Hex	Tri
0.5	ND	61
2	ND	43
4	ND	ND
6	ND	20
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND
53.5	ND	ND

A01-SB26		
Depth	Hex	Tri
0.5	ND	32
2	ND	ND
4	ND	ND
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND
53	ND	ND

A01-SB28		
Depth	Hex	Tri
0.5	ND	32
2	ND	ND
4	ND	ND
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND
53	ND	ND

A01-SB27		
Depth	Hex	Tri
0.5	ND	ND
2	ND	ND
4	ND	ND
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND
52	ND	NS

A01-SB29		
Depth	Hex	Tri
0.5	ND	ND
2	ND	ND
4	ND	ND
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND
54	ND	ND

A01-SB30		
Depth	Hex	Tri
0.5	ND	ND
2	ND	25
4	ND	24
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND
54	ND	ND

A01-SB33		
Depth	Hex	Tri
0.5	ND	29
2	ND	ND
4	ND	ND
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND

A01-SB32		
Depth	Hex	Tri
0.5	ND	ND
2	ND	ND
4	ND	ND
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND

A01-SB31		
Depth	Hex	Tri
0.5	ND	26
2	ND	ND
4	ND	ND
6	ND	ND
8	ND	ND
10	ND	ND
15	ND	ND
20	ND	ND
25	ND	ND
30	ND	ND
35	ND	ND
40	ND	ND
45	ND	ND
50	ND	ND

A01-SB12		
Depth	Hex	Tri
0.5	ND	17.7
2	ND	41.5
4	ND	38.6
6	ND	47.2
8	ND	104
10	ND	12.5
15	ND	10.8
20	ND	14.1
25	ND	15.4
30	ND	11.9
35	ND	16.8
40	ND	13.4
45	ND	12.1
50	ND	11.3
55	ND	7.9
60	ND	15.3

A01-SB13		
Depth	Hex	Tri
0.5	ND	16.8
2	ND	20.4
4	ND	22.5
6	ND	19.2
8	ND	14.1
10	ND	12.9
15	ND	16.6
20	ND	14.9
25	ND	14.2
30	ND	11.7
35	ND	15.2
40	ND	16.7
45	ND	12.9
50	ND	6.4
55	ND	8.8
60	ND	14.0

A01-SB21		
Depth	Hex	Tri
0.5	ND	2840
2	ND	357
4	ND	27.8
6	ND	25.1
8	ND	22.9
10	ND	18.4
15	ND	20.1
20	ND	10.8
25	ND	13.4
30	ND	15.0
35	ND	15.3
40	ND	19.9
45	ND	14.4
50	ND	4.7
55	ND	5.6
60	ND	9.4

A01-SB15		
Depth	Hex	Tri
0.5	ND	19.0
2	ND	17.1
4	ND	15.8
6	ND	20.0
8	ND	16.7
10	ND	16.8
15	ND	16.7
20	ND	14.5
25	ND	16.1
30	ND	13.3
35	ND	16.8
40	ND	12.1
45	ND	12.7
50	ND	5.5
55	ND	10.0

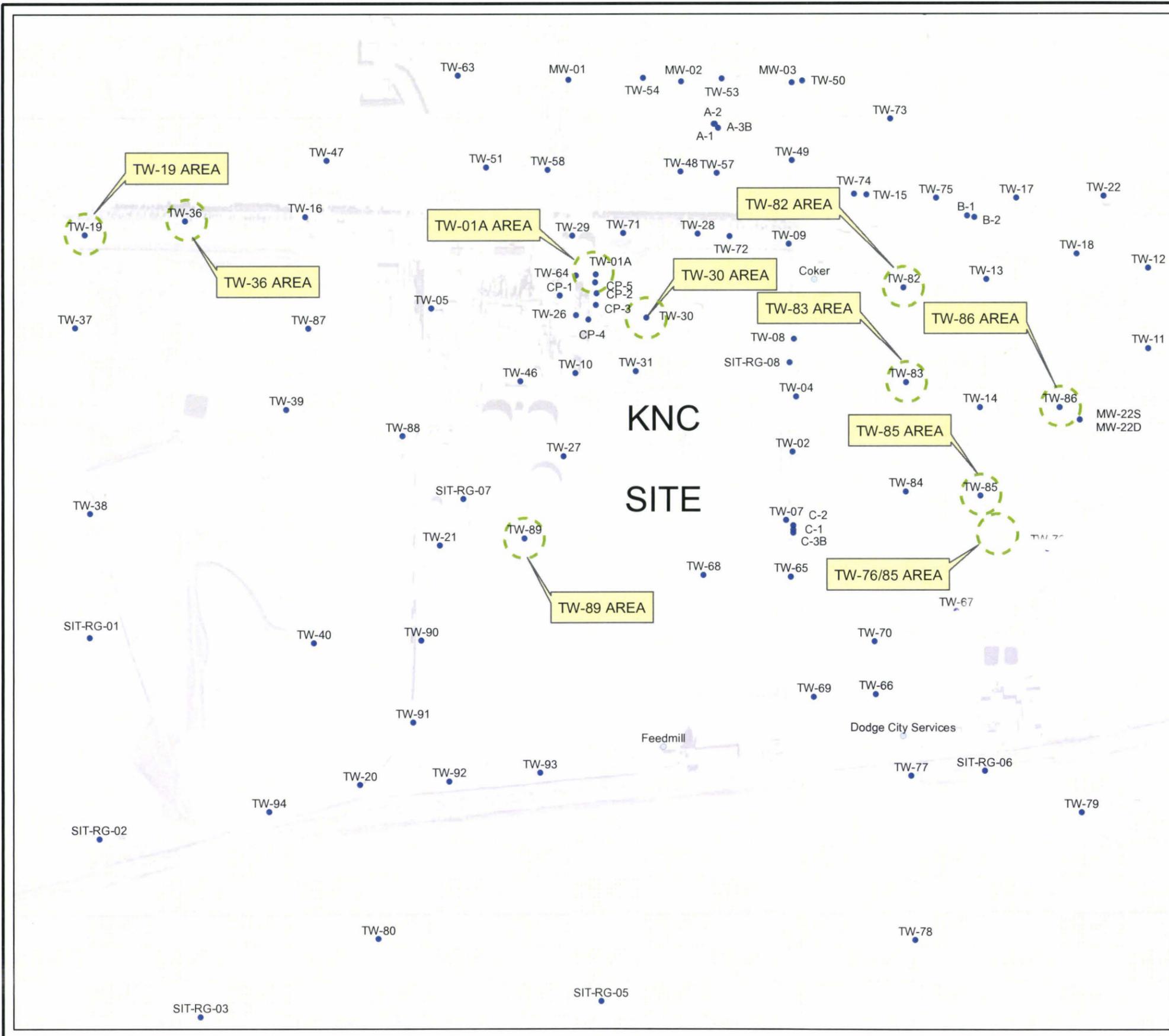
A01-SB14		
Depth	Hex	Tri
0.5	ND	30.6
2	ND	33.7
4	ND	15.3
6	ND	17.6
8	ND	17.4
10	ND	17.1
15	ND	13.9
20	ND	14.8
25	ND	13.8
30	ND	12.8
35	ND	15.4
40	ND	15.6
45	ND	14.3
50	ND	6.2
55	ND	4.9

A01-SB22		
Depth	Hex	Tri
0.5	83	30.6
2	122	33.7
4	50	15.3
6	ND	17.6
8	ND	17.4
10	ND	16.1
15	ND	13.9
20	ND	14.8
25	ND	13.8
30	25	12.8
35	25	15.4
40	ND	15.6
45	ND	14.3
50	ND	6.2
55	ND	4.9

A01-SB16		
Depth	Hex	Tri
0.5	ND	61.9
2	ND	17.2
4	ND	17.9
6	ND	22.0
8	ND	18.1
10	ND	18.4
15	ND	15.2
20	ND	15.6
25	ND	17.0
30	ND	15.7
35	ND	16.0
40	ND	17.9
45	ND	12.7
50	ND	6.1
55	ND	9.0

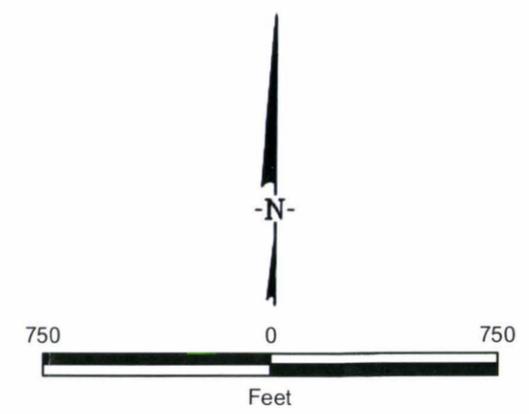
A01-SB17		
Depth	Hex	Tri
0.5	ND	23.4
2	ND	13.7
4	ND	17.9
6	ND	16.6
8	ND	19.4
10	ND	14.4
15	ND	11.5
20	ND	14.1
25	ND	11.2
30	ND	14.7
35	ND	15.4
40	ND	20.8
45	ND	11.6
50	ND	6.5
55	ND	10.4

A01-SB18		
Depth	Hex	Tri
0.5	ND	11.0
2	ND	18.3
4	ND	14.9
6	ND	16.9
8	ND	18.0
10	ND	12.8
15	ND	17.9
20	ND	14.0
25	ND	13.6
30	ND	14.7
35	ND	15.4
40	ND	13.2
45	ND	12.5
50	ND	4.6
55	ND	4.0



**LEGEND**

- MONITORING WELL LOCATION
- PRIVATE WELL LOCATION



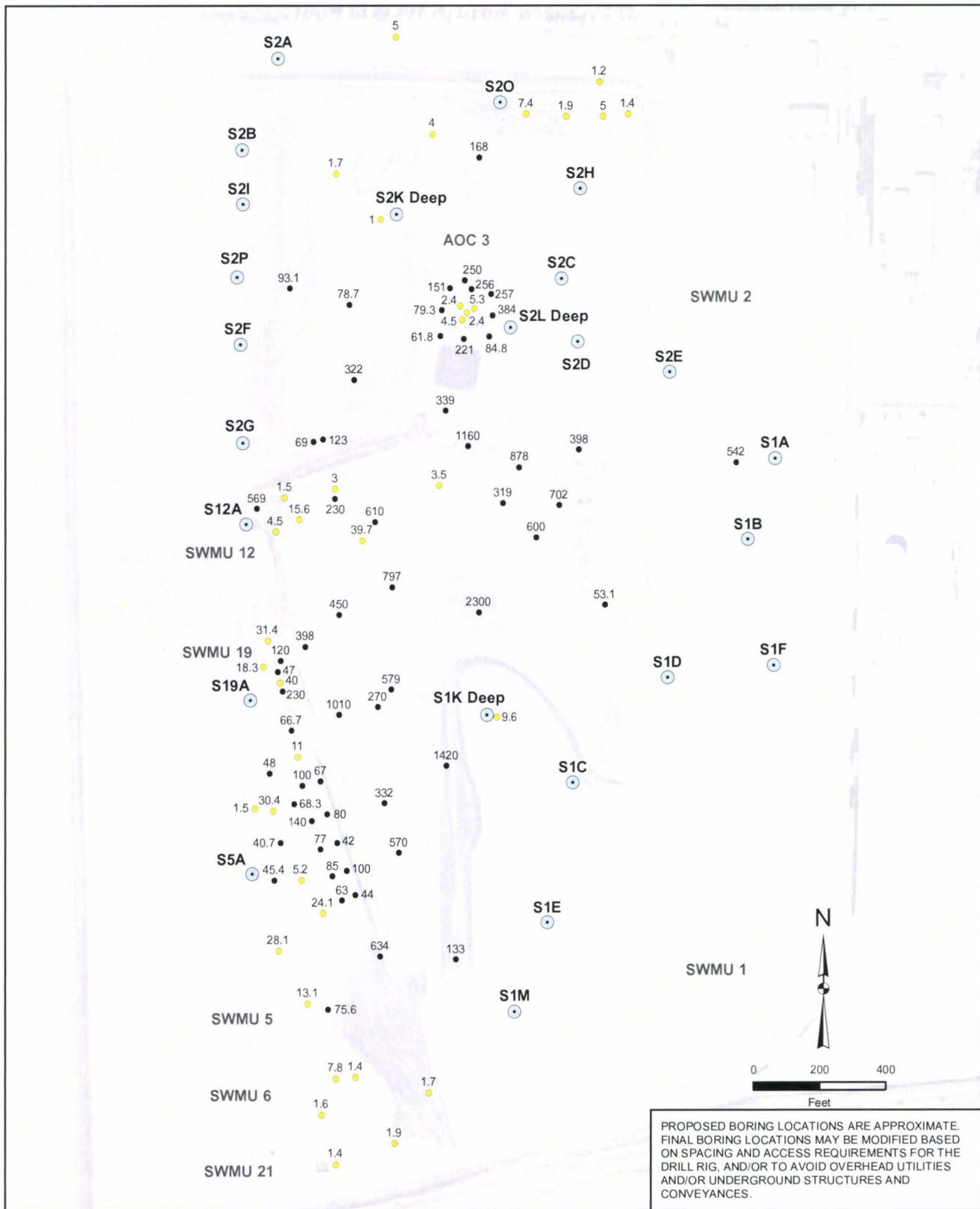
**ADDITIONAL SPILL AREAS**

PREPARED BY:		<b>KOCH</b> KOCH NITROGEN COMPANY 11559 US HIGHWAY 50 - P.O. BOX 1337 DODGE CITY, KS 67801	
PROJECT NO.	FIGURE NO.	3	
DATE. DECEMBER 2012	REVISION NO.		



**ATTACHMENT D**

**APPENDIX REPLACEMENT FIGURES**



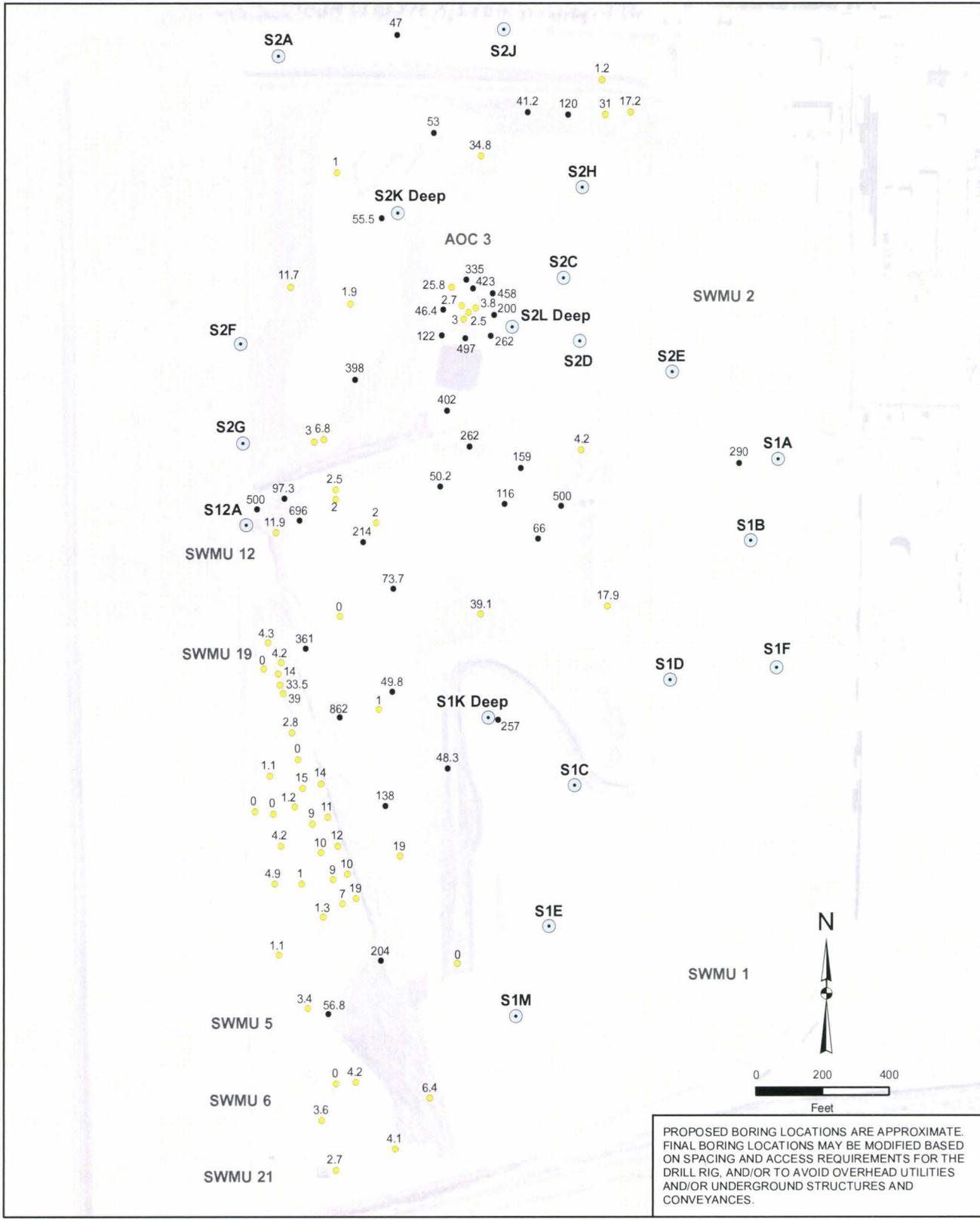
PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 4-6 FT  
WEST STUDY AREA**

PREPARED BY:	
 <small>KOCH NITROGEN COMPANY 11599 US HIGHWAY 50, P.O. BOX 1337 DODGE CITY, KS 67801</small>	
PROJECT:	FIGURE NO. B-4
DATE: DECEMBER 2012	FILE NO.



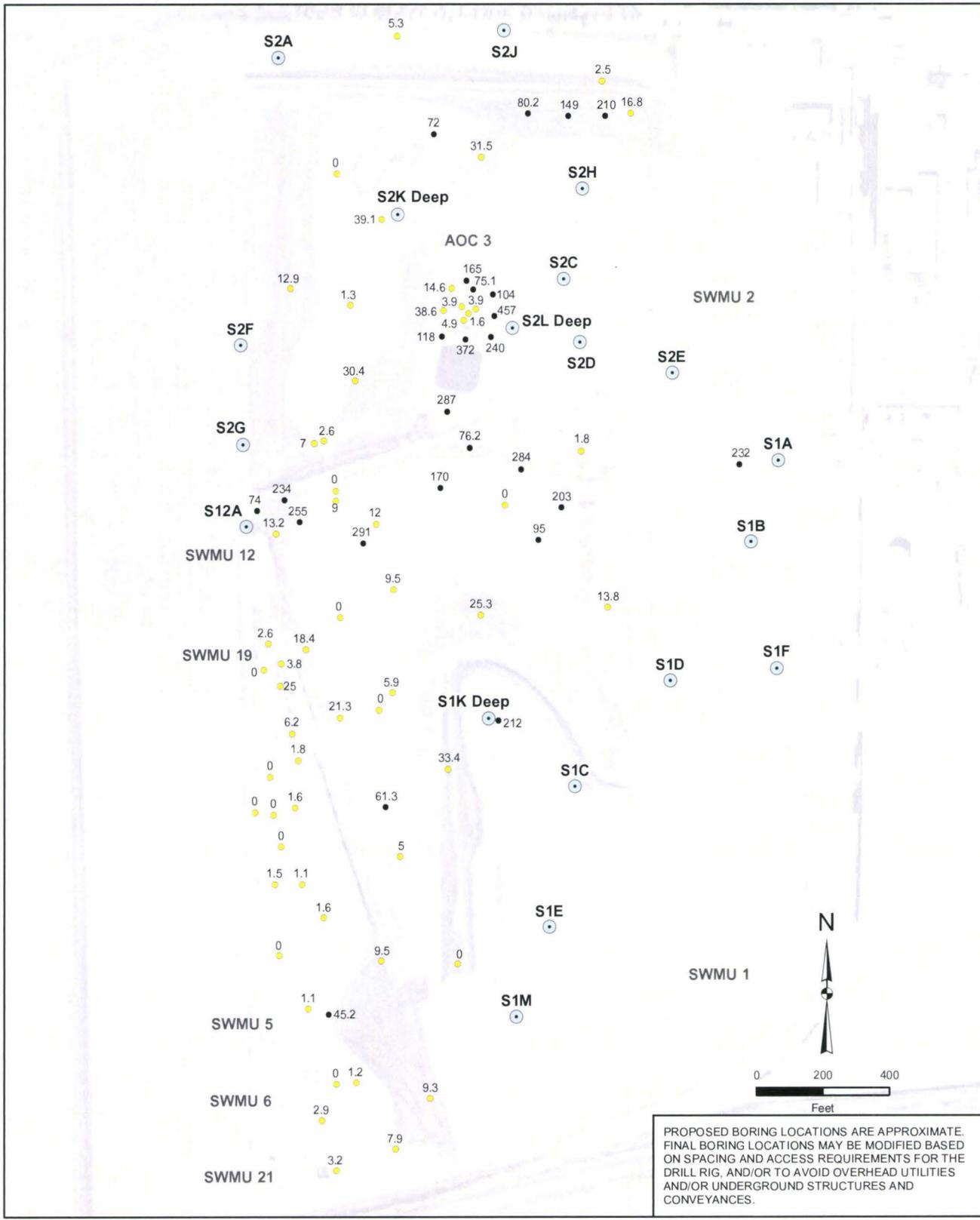
PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 10-15 FT  
WEST STUDY AREA**

PREPARED BY:		
		
PROJECT:	FIGURE NO.	B-7
DATE: DECEMBER 2012	FILE NO.	



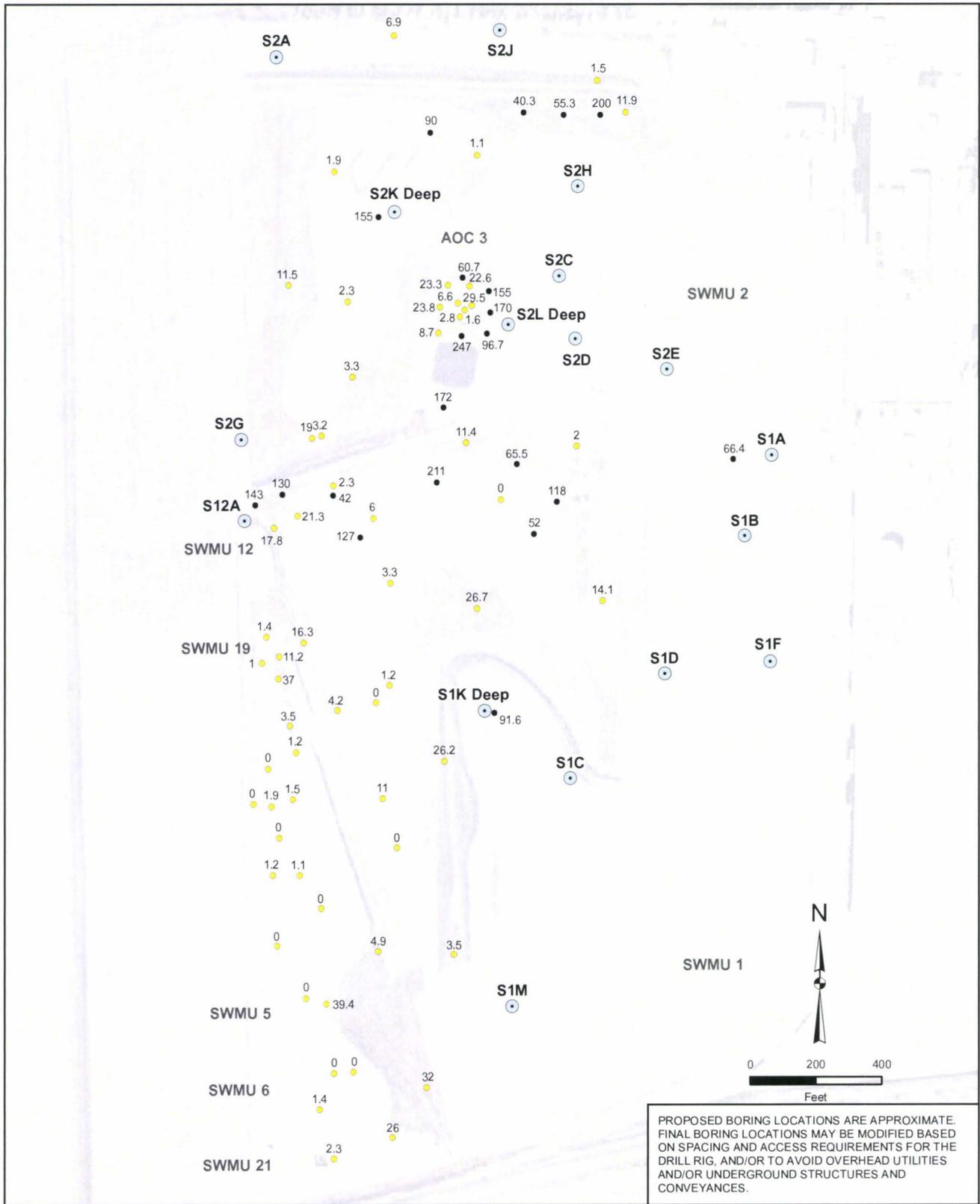
PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 15-20 FT  
WEST STUDY AREA**

PREPARED BY:		
<b>KOCH</b> KOCH NITROGEN COMPANY 11559 US HIGHWAY 26 - P.O. BOX 1337 GOIDGE CITY, KS 67801		
PROJECT:	FIGURE NO.	B-8
DATE: DECEMBER 2012	FILE NO.	



PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

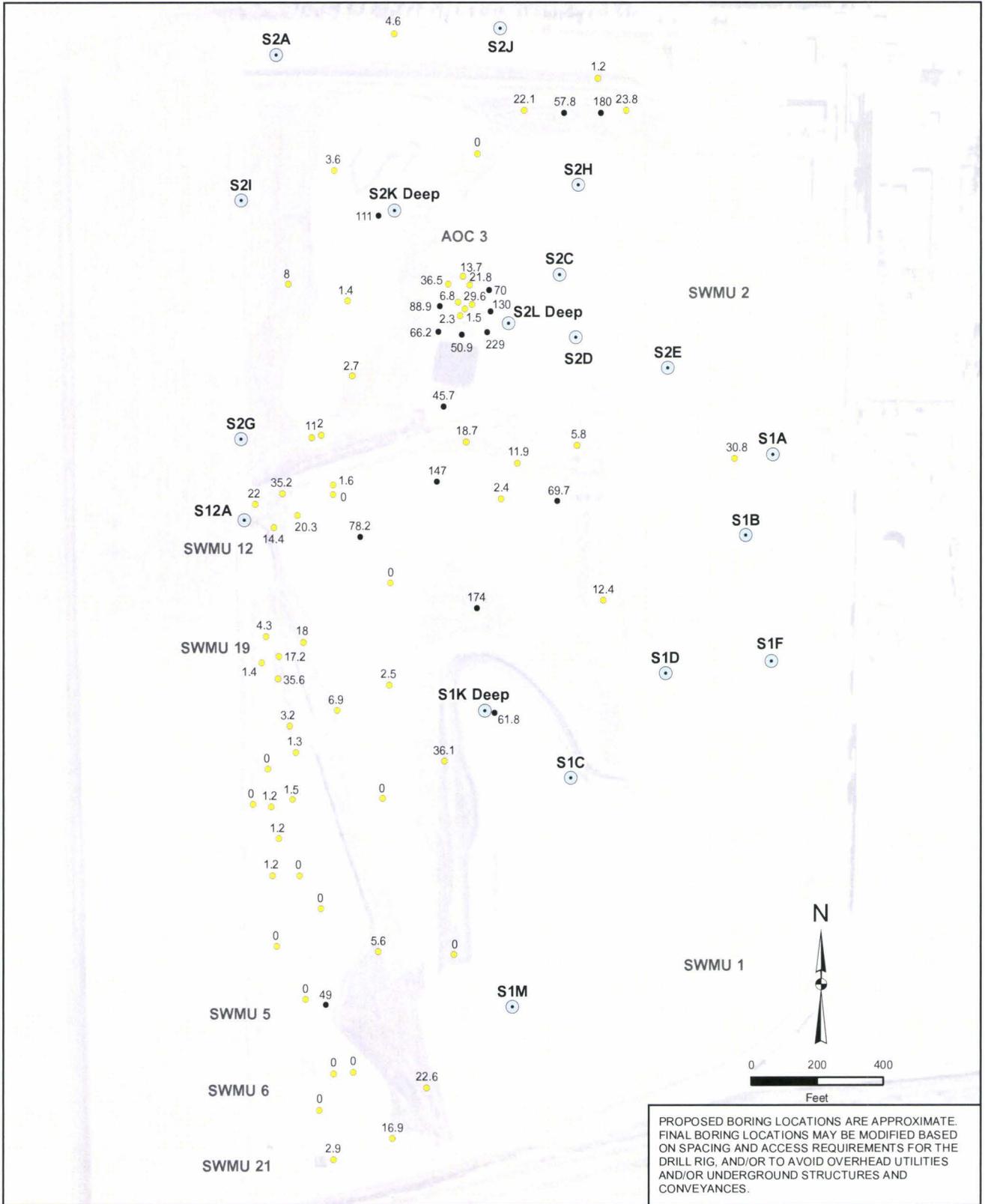
- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 20-25 FT  
WEST STUDY AREA**

PREPARED BY:



PROJECT.	FIGURE NO.	B-9
DATE. DECEMBER 2012	FILE NO.	



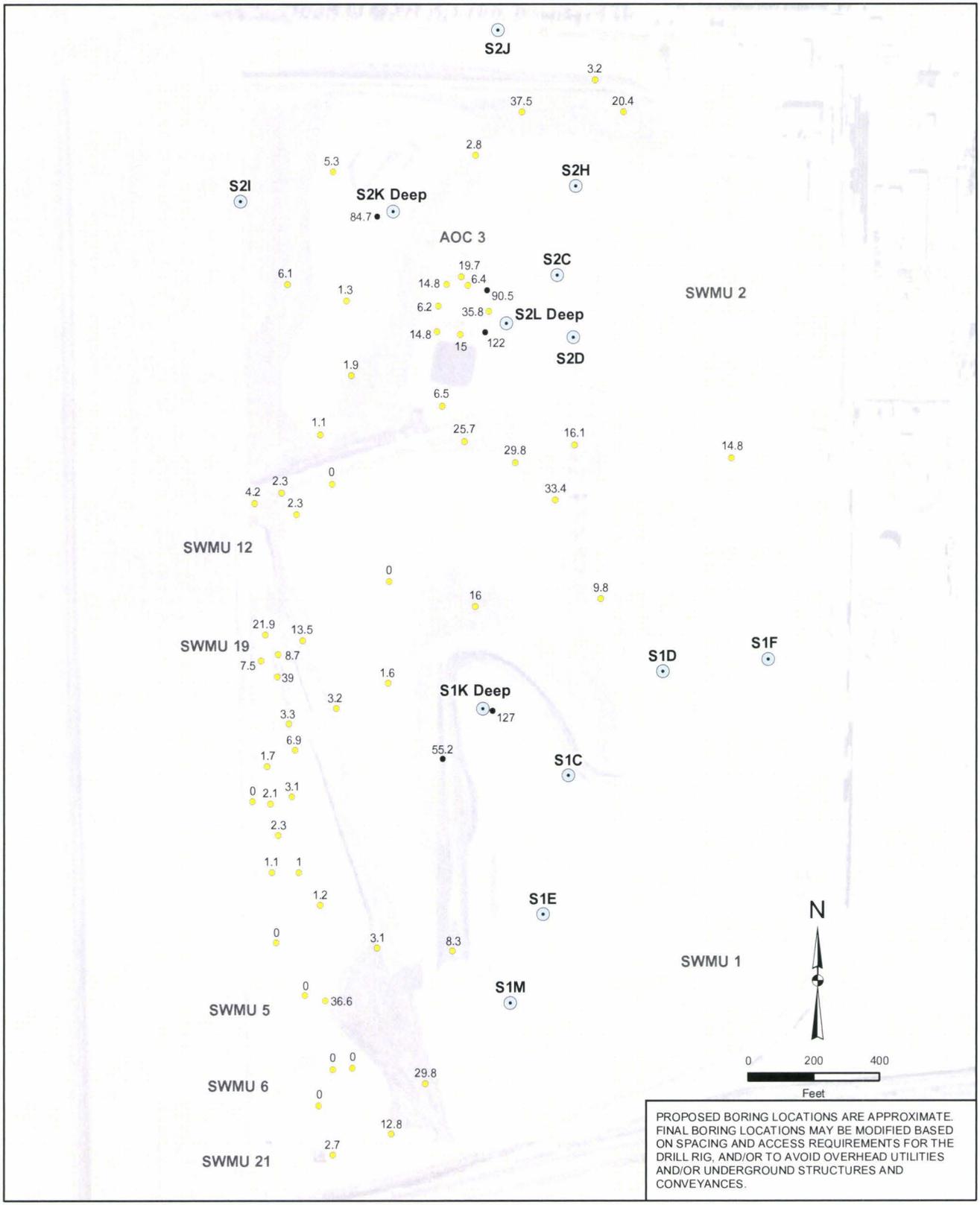
**LEGEND**

- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 25-30 FT  
WEST STUDY AREA**

PREPARED BY:	
 <small>KOCH NITROGEN COMPANY 11559 US HIGHWAY 50 - P.O. BOX 1337 DODGE CITY, KS 67801</small>	
PROJECT.	FIGURE NO. B-10
DATE. DECEMBER 2012	FILE NO.





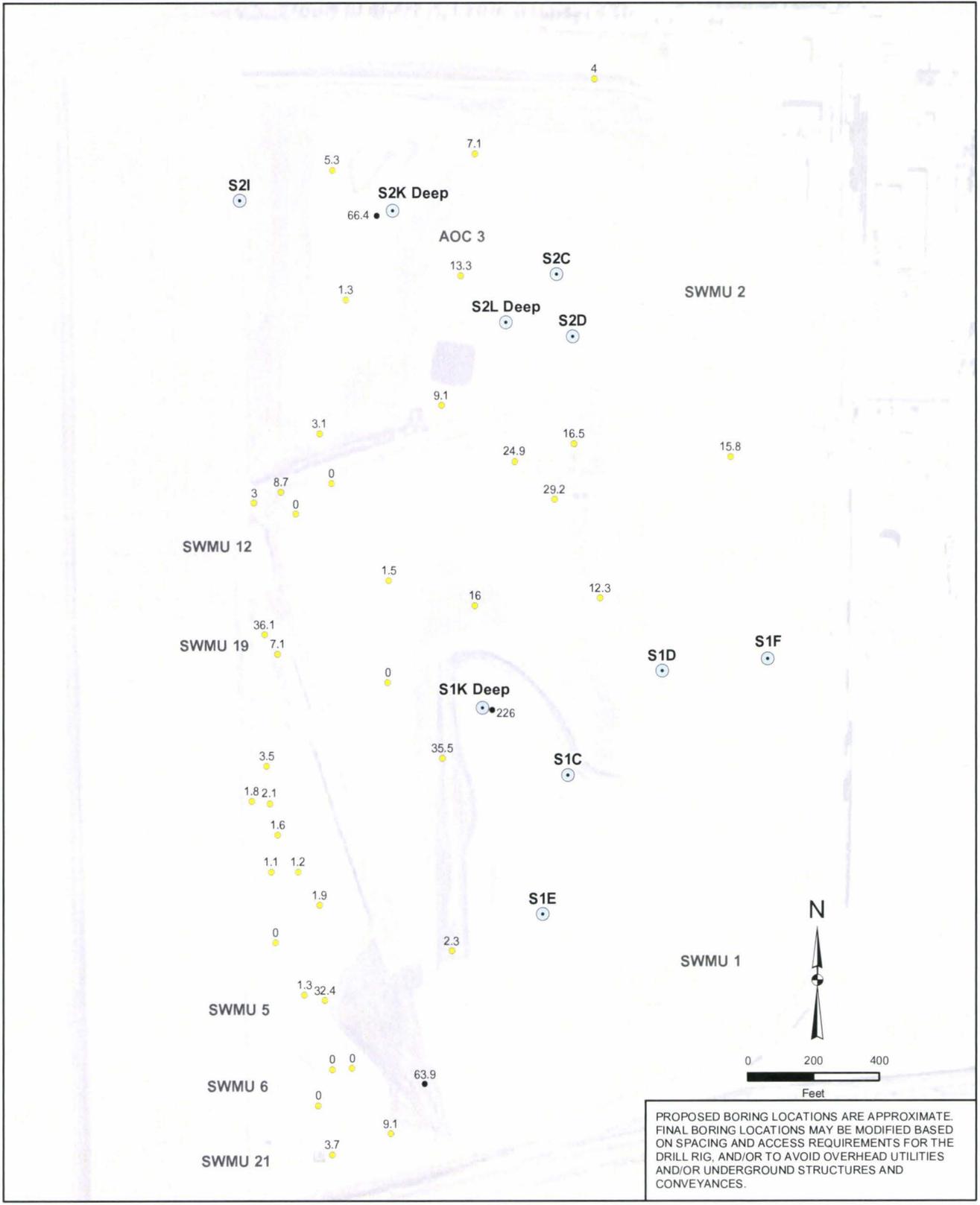
PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 35-40 FT  
WEST STUDY AREA**

PREPARED BY:	
<b>KOCH</b> KOCH NITROGEN COMPANY 11599 US HIGHWAY 99 - P.O. BOX 1337 DODGE CITY, KS 67801	
PROJECT:	FIGURE NO. B-12
DATE: DECEMBER 2012	FILE NO.



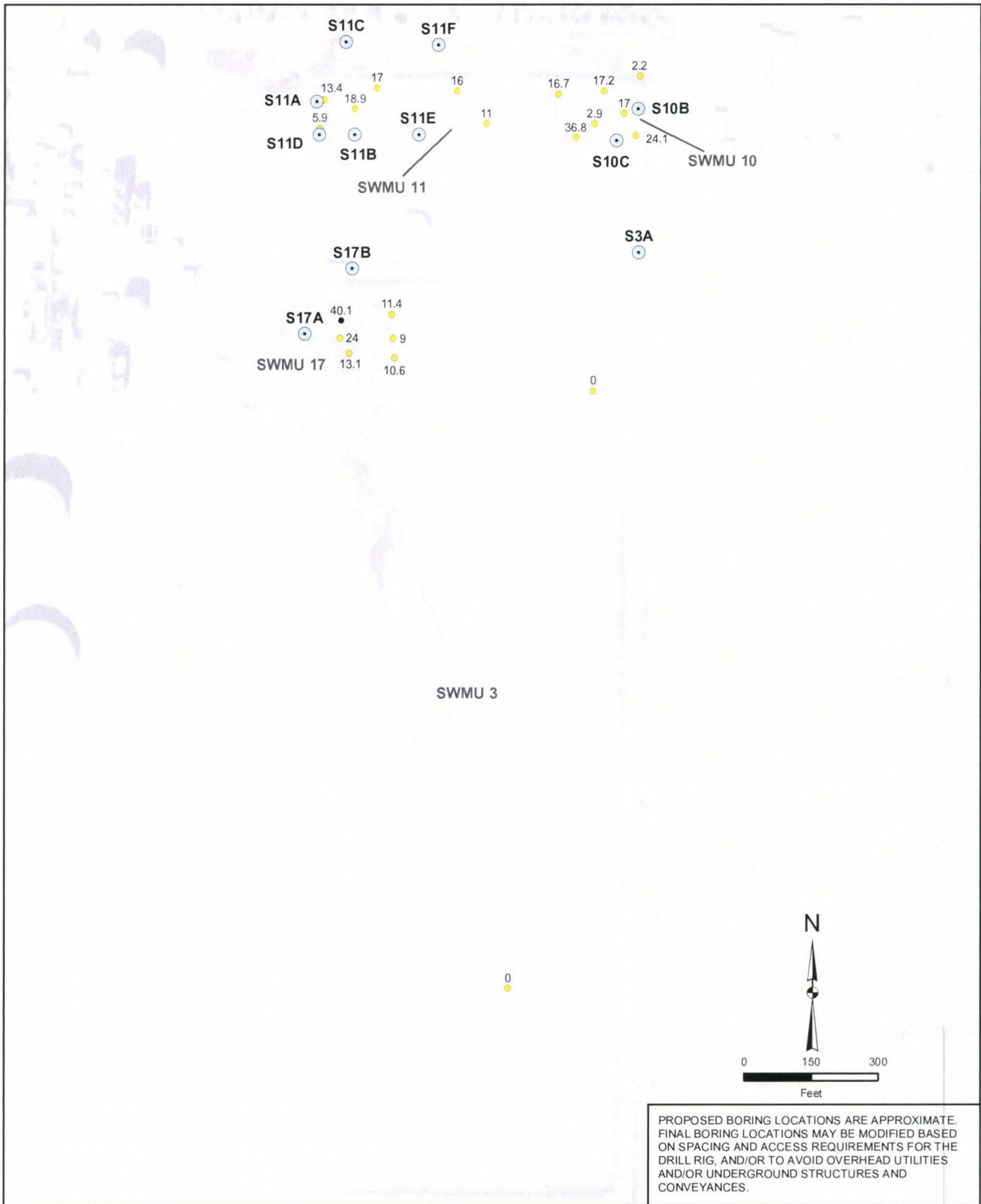
PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 40-45 FT  
WEST STUDY AREA**

PREPARED BY:	
 <small>KOCH NITROGEN COMPANY 11599 US HIGHWAY 59 - P.O. BOX 1337 DODGE CITY, KS 67801</small>	
PROJECT.	FIGURE NO. B-13
DATE. DECEMBER 2012	FILE NO.



PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

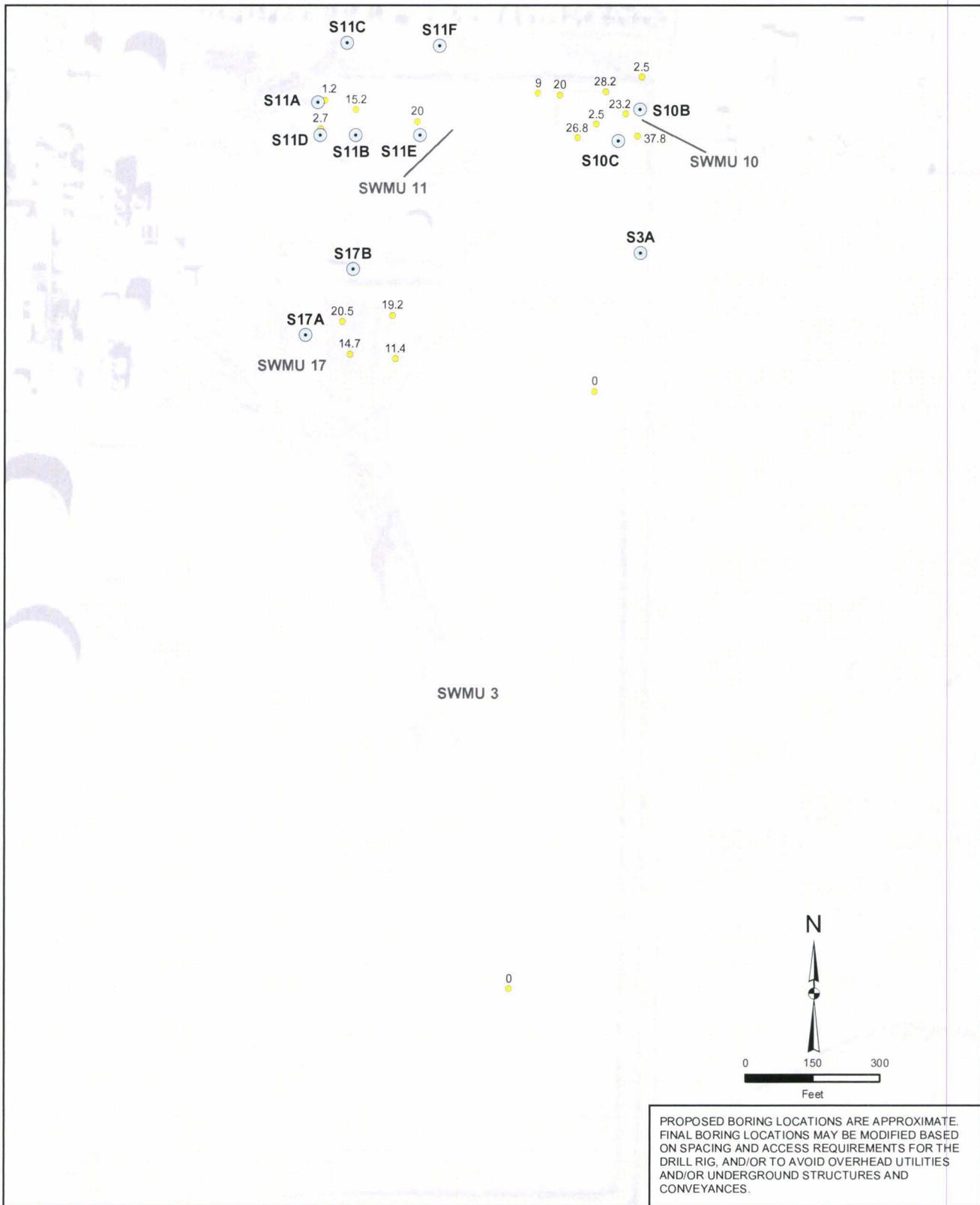
- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 6-8 FT  
EAST STUDY AREA**

PREPARED BY:



PROJECT.	FIGURE NO. B-21
DATE. DECEMBER 2012	FILE NO.



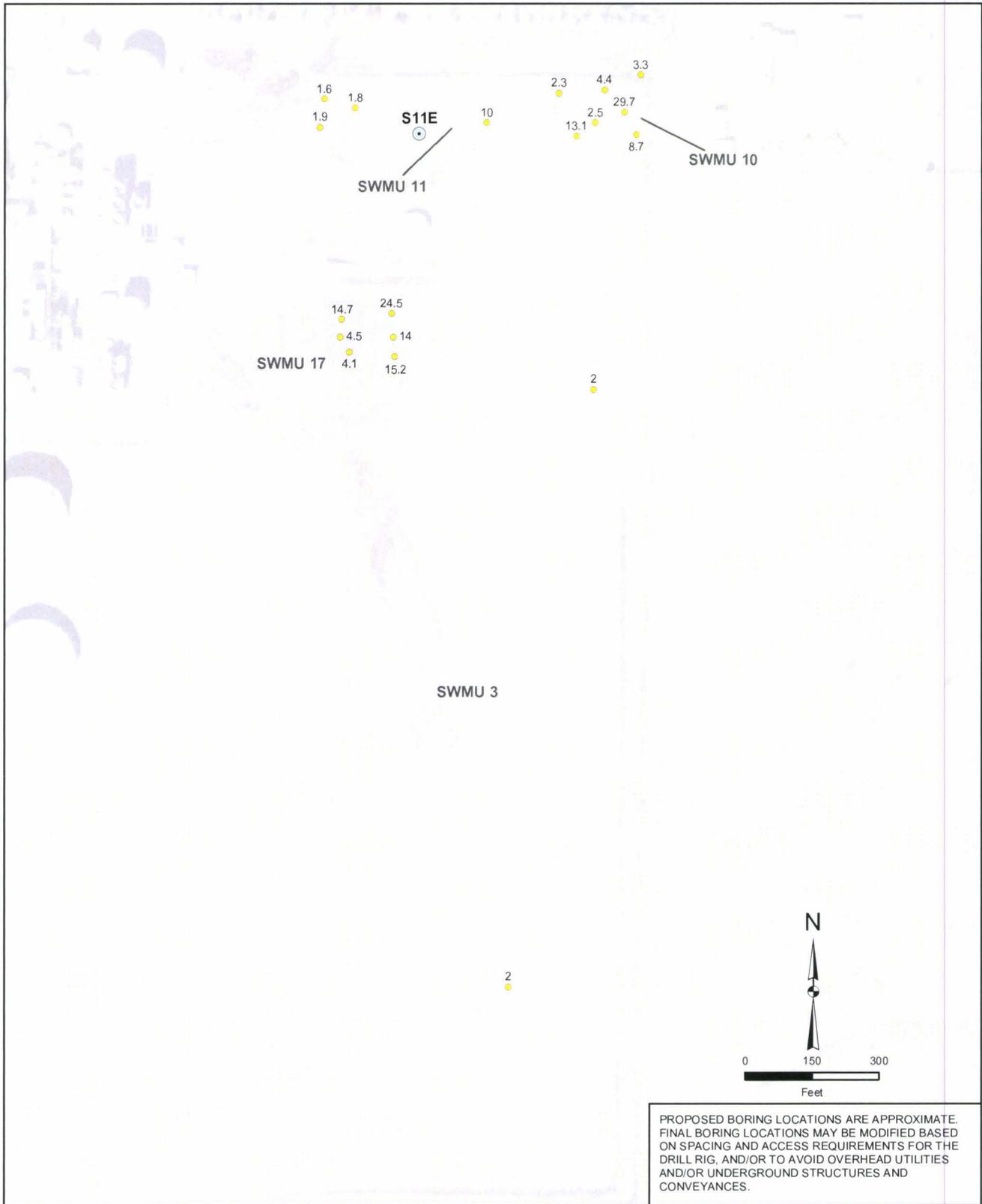
PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 8-10 FT  
EAST STUDY AREA**

PREPARED BY:	
 <b>KOCH</b> KOCH NITROGEN COMPANY 11509 US HIGHWAY 50 - P.O. BOX 1327 DODGE CITY, KS 67801	
PROJECT.	FIGURE NO. B-22
DATE. DECEMBER 2012	FILE NO.



PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.

**LEGEND**

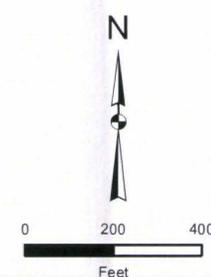
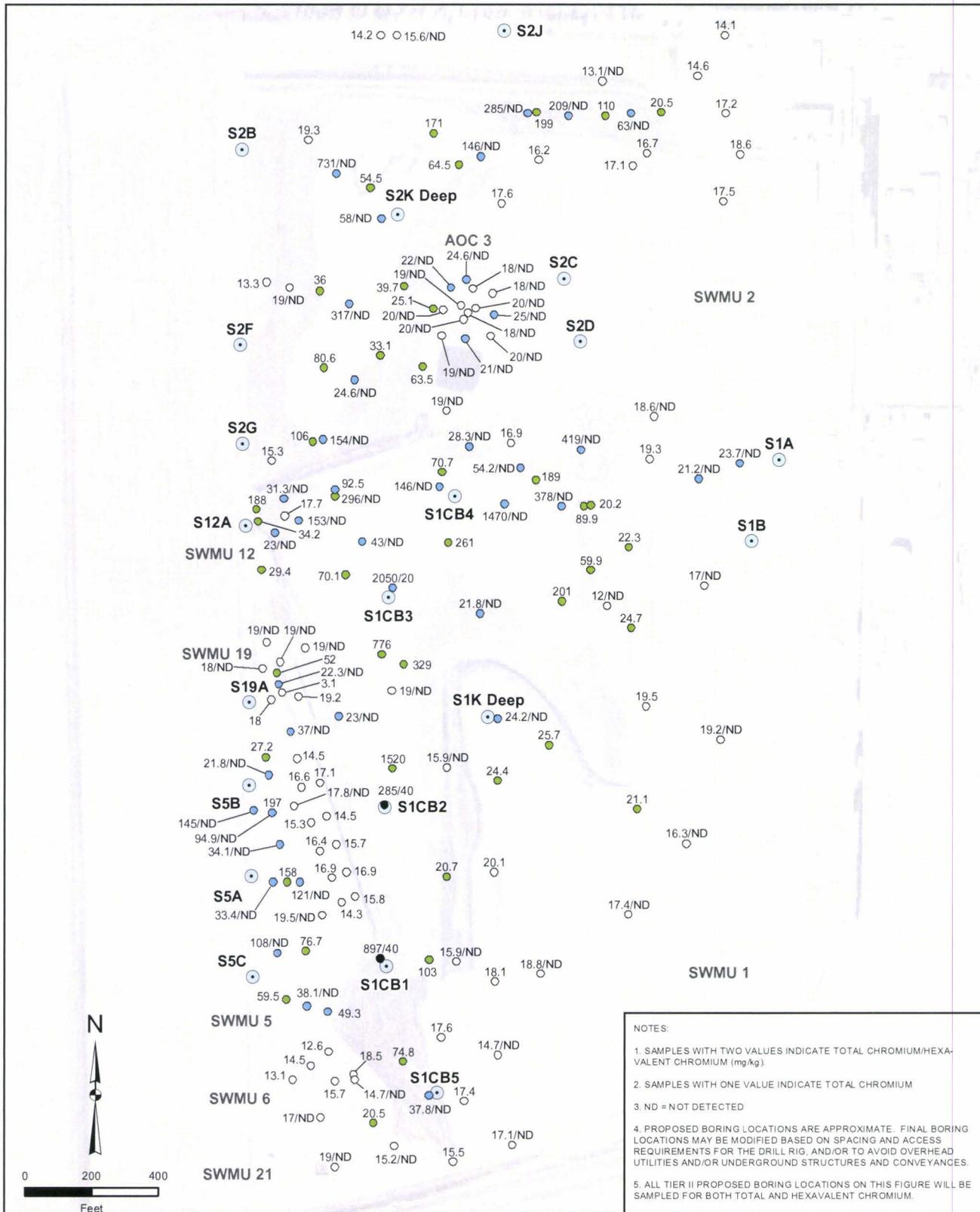
- TIER II SAMPLE LOCATION FOR NITRATE+NITRITE (as N)
- NITRATE+NITRITE (as N) CONCENTRATION GREATER THAN 40 mg/kg
- NITRATE+NITRITE (as N) CONCENTRATION LESS THAN OR EQUAL TO 40 mg/kg

**NITRATE+NITRITE (as N)  
SAMPLE LOCATIONS  
IN SOIL 10-15 FT  
EAST STUDY AREA**

PREPARED BY:



PROJECT.	FIGURE NO. B-23
DATE. DECEMBER 2012	FILE NO.



NOTES:

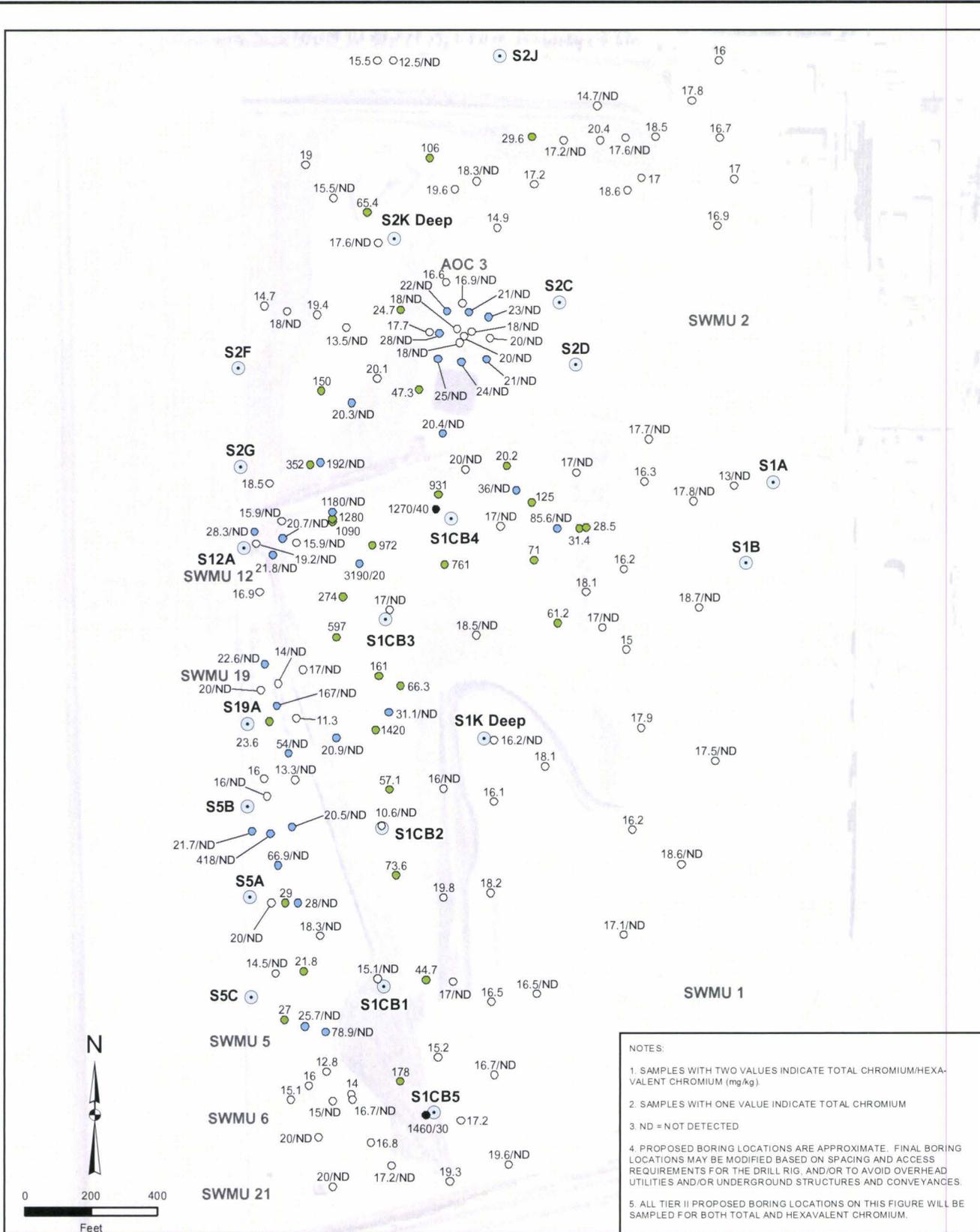
1. SAMPLES WITH TWO VALUES INDICATE TOTAL CHROMIUM/HEXA-VALENT CHROMIUM (mg/kg)
2. SAMPLES WITH ONE VALUE INDICATE TOTAL CHROMIUM
3. ND = NOT DETECTED
4. PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.
5. ALL TIER II PROPOSED BORING LOCATIONS ON THIS FIGURE WILL BE SAMPLED FOR BOTH TOTAL AND HEXAVALENT CHROMIUM.

- LEGEND**
- TIER II SOIL SAMPLE FOR TOTAL AND HEXAVALENT CHROMIUM
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM > 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM NOT SAMPLED
  - TOTAL CHROMIUM ≤ 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg OR NOT SAMPLED

**TOTAL CHROMIUM AND  
HEXAVALENT CHROMIUM  
SAMPLE LOCATIONS  
IN SOIL 0-0.5 FT  
WEST STUDY AREA**

PREPARED BY: **KOCH**  
KOCH NITROGEN COMPANY  
11599 US HIGHWAY 50, P.O. BOX 1337  
DODGE CITY, KS 67801

PROJECT:	FIGURE NO. C-1
DATE: DECEMBER 2012	FILE NO.



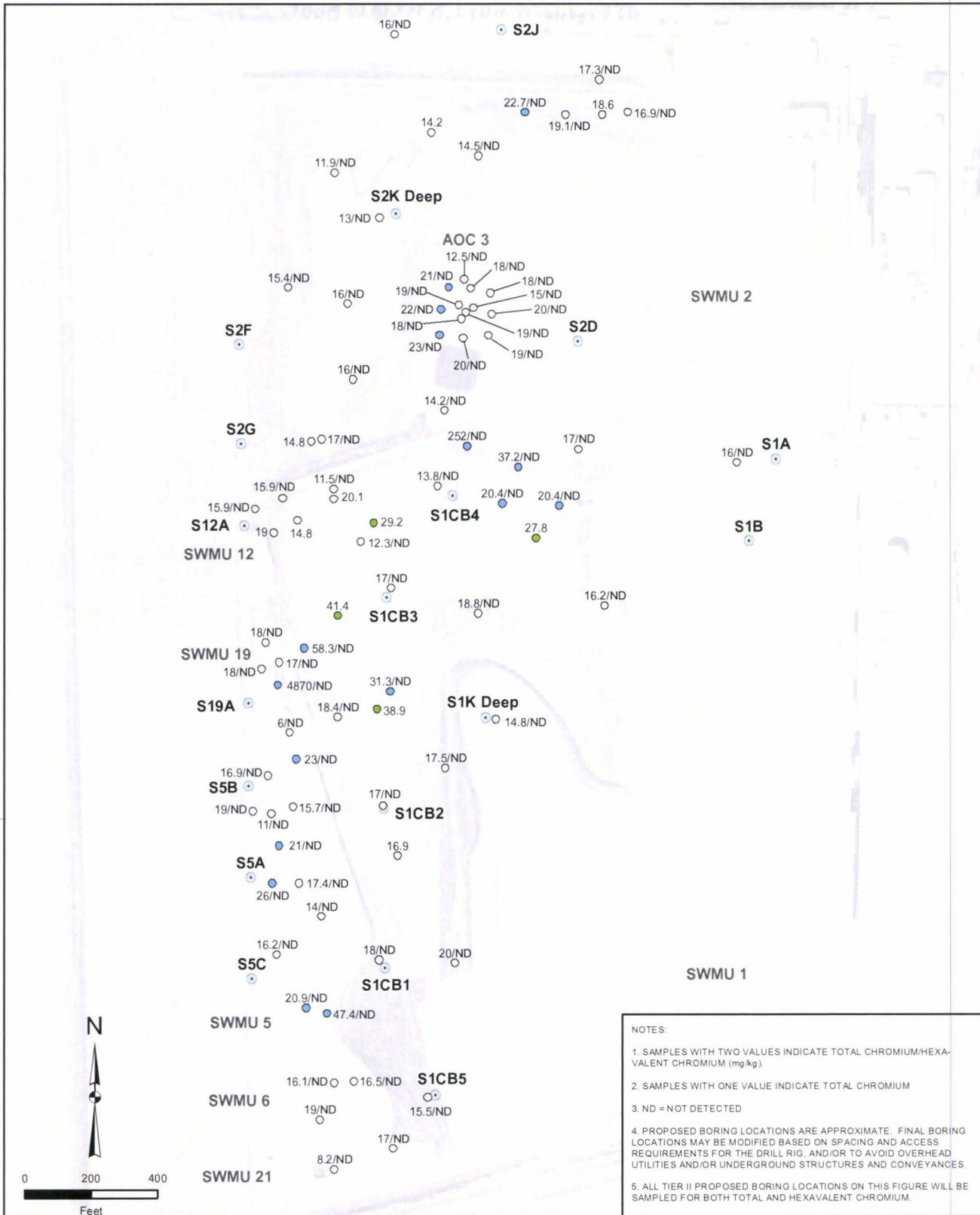
NOTES:

1. SAMPLES WITH TWO VALUES INDICATE TOTAL CHROMIUM/HEXA-VALENT CHROMIUM (mg/kg)
2. SAMPLES WITH ONE VALUE INDICATE TOTAL CHROMIUM
3. ND = NOT DETECTED
4. PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.
5. ALL TIER II PROPOSED BORING LOCATIONS ON THIS FIGURE WILL BE SAMPLED FOR BOTH TOTAL AND HEXAVALENT CHROMIUM.

- LEGEND**
- TIER II SOIL SAMPLE FOR TOTAL AND HEXAVALENT CHROMIUM
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM > 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM <= 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM NOT SAMPLED
  - TOTAL CHROMIUM <= 20.1 mg/kg AND HEXAVALENT CHROMIUM <= 20 mg/kg OR NOT SAMPLED

**TOTAL CHROMIUM AND  
HEXAVALENT CHROMIUM  
SAMPLE LOCATIONS  
IN SOIL 0.5-2 FT  
WEST STUDY AREA**

PREPARED BY:		
 <small>KOCH NITROGEN COMPANY 11599 US HIGHWAY 50 - P.O. BOX 1337 DODDGE CITY, KS 67801</small>		
PROJECT.	FIGURE NO.	C-2
DATE. DECEMBER 2012	FILE NO.	



NOTES:

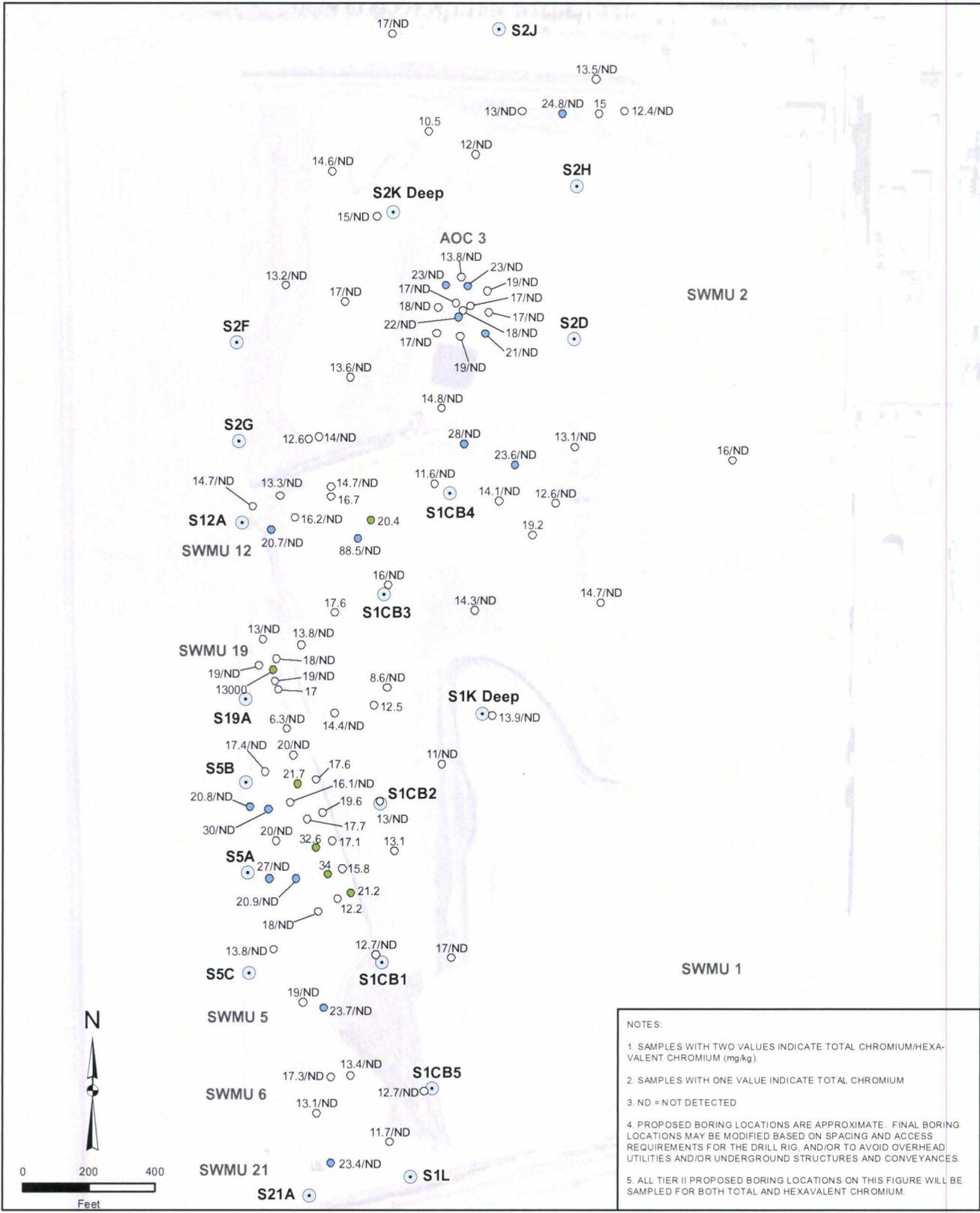
1. SAMPLES WITH TWO VALUES INDICATE TOTAL CHROMIUM/HEXA-VALENT CHROMIUM (mg/kg).
2. SAMPLES WITH ONE VALUE INDICATE TOTAL CHROMIUM
3. ND = NOT DETECTED
4. PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.
5. ALL TIER II PROPOSED BORING LOCATIONS ON THIS FIGURE WILL BE SAMPLED FOR BOTH TOTAL AND HEXAVALENT CHROMIUM.

**LEGEND**

- TIER II SOIL SAMPLE FOR TOTAL AND HEXAVALENT CHROMIUM
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM > 20 mg/kg
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM NOT SAMPLED
- TOTAL CHROMIUM ≤ 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg OR NOT SAMPLED

**TOTAL CHROMIUM AND  
HEXAVALENT CHROMIUM  
SAMPLE LOCATIONS  
IN SOIL 2-4 FT  
WEST STUDY AREA**

PREPARED BY:		<b>KOCH</b> KOCH NITROGEN COMPANY 11559 US HIGHWAY 26 - P.O. BOX 1337 GODDIE CITY, KS 67801	
PROJECT:	FIGURE NO.	C-3	
DATE: DECEMBER 2012	FILE NO.		



NOTES:

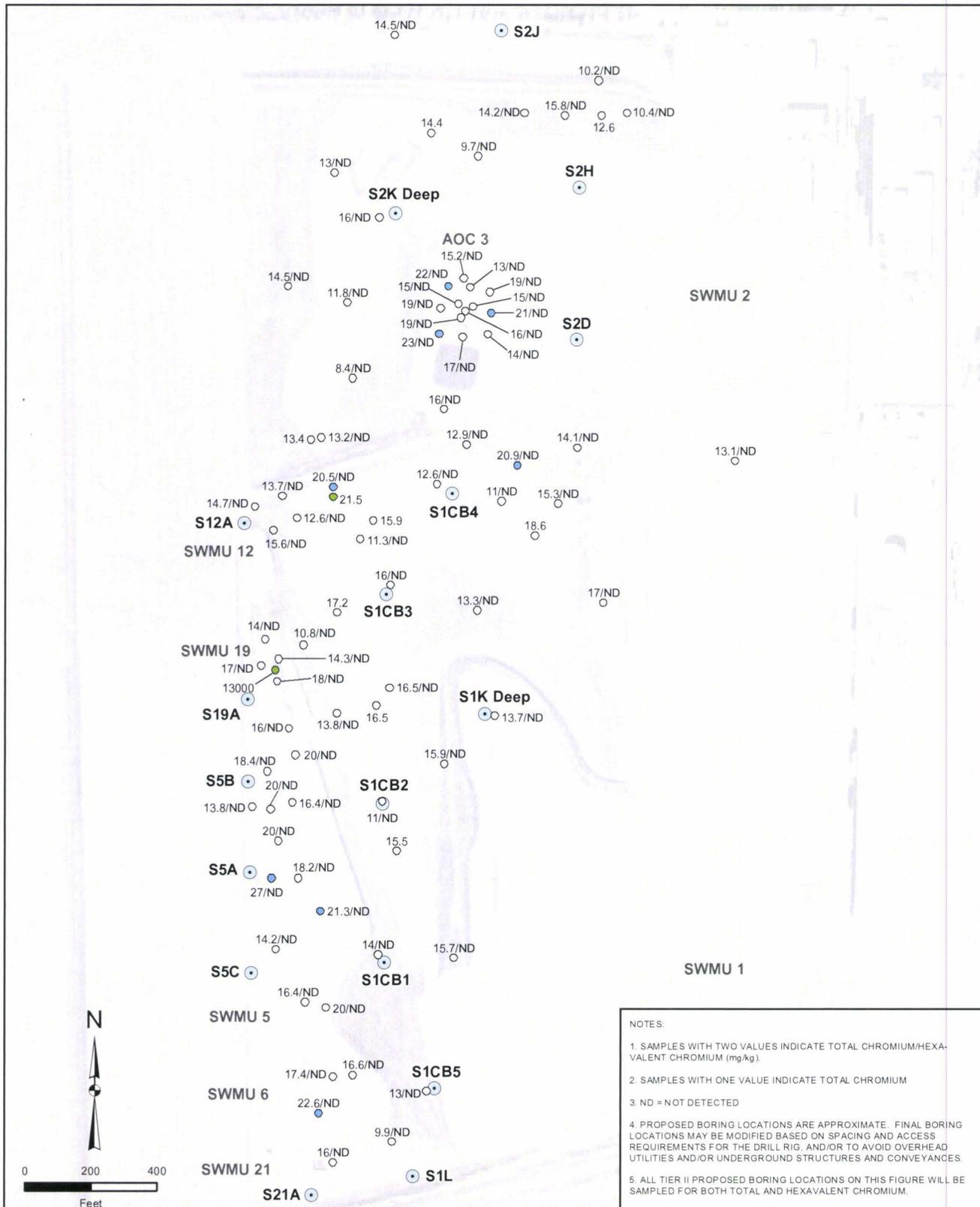
1. SAMPLES WITH TWO VALUES INDICATE TOTAL CHROMIUM/HEXA-VALENT CHROMIUM (mg/kg).
2. SAMPLES WITH ONE VALUE INDICATE TOTAL CHROMIUM
3. ND = NOT DETECTED
4. PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.
5. ALL TIER II PROPOSED BORING LOCATIONS ON THIS FIGURE WILL BE SAMPLED FOR BOTH TOTAL AND HEXAVALENT CHROMIUM.

**LEGEND**

- TIER II SOIL SAMPLE FOR TOTAL AND HEXAVALENT CHROMIUM
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM > 20 mg/kg
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM NOT SAMPLED
- TOTAL CHROMIUM ≤ 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg OR NOT SAMPLED

**TOTAL CHROMIUM AND  
HEXAVALENT CHROMIUM  
SAMPLE LOCATIONS  
IN SOIL 4-6 FT  
WEST STUDY AREA**

PREPARED BY:		 KOCH NITROGEN COMPANY 11559 US HIGHWAY 90 - P.O. BOX 1337 DODDIE CITY, KS 67801
PROJECT:	FIGURE NO. C-4	
DATE: DECEMBER 2012	FILE NO.	



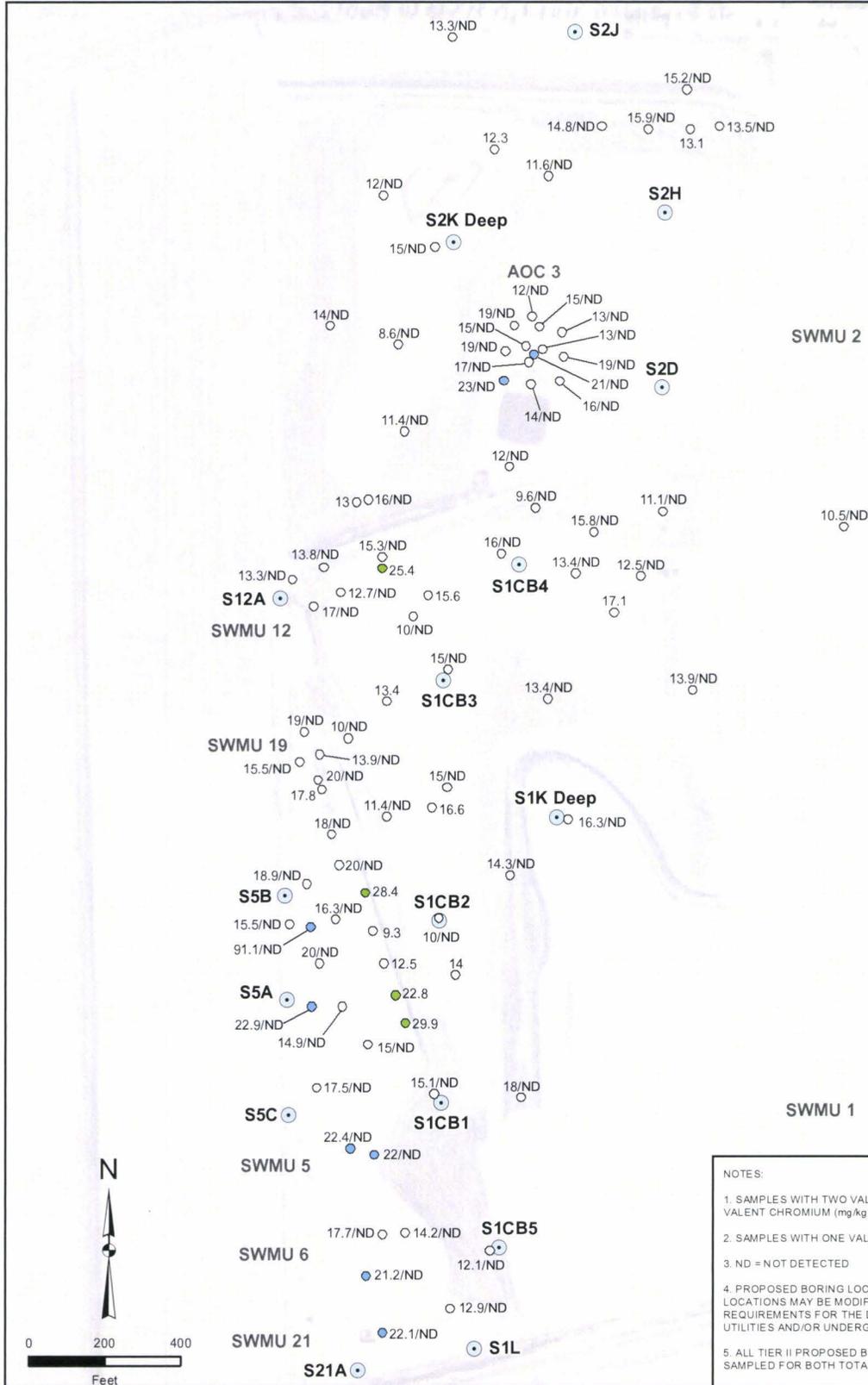
**NOTES:**

1. SAMPLES WITH TWO VALUES INDICATE TOTAL CHROMIUM/HEXA-VALENT CHROMIUM (mg/kg).
2. SAMPLES WITH ONE VALUE INDICATE TOTAL CHROMIUM
3. ND = NOT DETECTED
4. PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.
5. ALL TIER II PROPOSED BORING LOCATIONS ON THIS FIGURE WILL BE SAMPLED FOR BOTH TOTAL AND HEXAVALENT CHROMIUM.

- LEGEND**
- TIER II SOIL SAMPLE FOR TOTAL AND HEXAVALENT CHROMIUM
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM > 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM <= 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM NOT SAMPLED
  - TOTAL CHROMIUM <= 20.1 mg/kg AND HEXAVALENT CHROMIUM <= 20 mg/kg OR NOT SAMPLED

**TOTAL CHROMIUM AND  
HEXAVALENT CHROMIUM  
SAMPLE LOCATIONS  
IN SOIL 6-8 FT  
WEST STUDY AREA**

PREPARED BY:	
 <b>KOCH</b> KOCH NITROGEN COMPANY 11599 US HIGHWAY 50 - P.O. BOX 1337 DODDGE CITY, KS 67801	
PROJECT:	FIGURE NO. C-5
DATE: DECEMBER 2012	FILE NO.



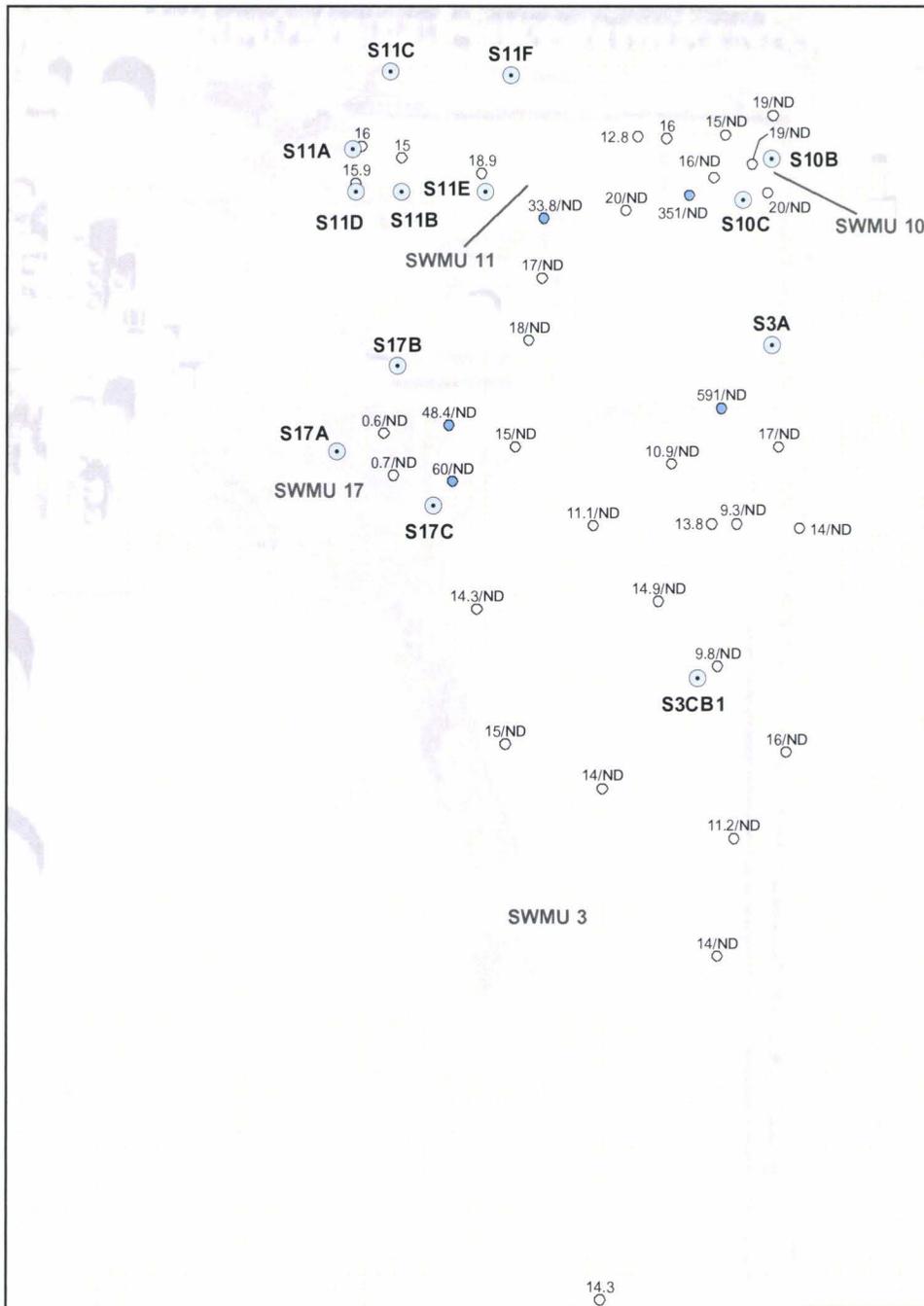
NOTES:

1. SAMPLES WITH TWO VALUES INDICATE TOTAL CHROMIUM/HEXA-VALENT CHROMIUM (mg/kg)
2. SAMPLES WITH ONE VALUE INDICATE TOTAL CHROMIUM
3. ND = NOT DETECTED
4. PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.
5. ALL TIER II PROPOSED BORING LOCATIONS ON THIS FIGURE WILL BE SAMPLED FOR BOTH TOTAL AND HEXAVALENT CHROMIUM.

- LEGEND**
- TIER II SOIL SAMPLE FOR TOTAL AND HEXAVALENT CHROMIUM
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM > 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM <= 20 mg/kg
  - TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM NOT SAMPLED
  - TOTAL CHROMIUM <= 20.1 mg/kg AND HEXAVALENT CHROMIUM <= 20 mg/kg OR NOT SAMPLED

**TOTAL CHROMIUM AND  
HEXAVALENT CHROMIUM  
SAMPLE LOCATIONS  
IN SOIL 8-10 FT  
WEST STUDY AREA**

PREPARED BY:	
 <small>KOCH NITROGEN COMPANY 11558 US HIGHWAY 50 - P.O. BOX 1337 DODGE CITY, KS 67801</small>	
PROJECT.	FIGURE NO. C-6
DATE. DECEMBER 2012	FILE NO.



NOTES:

1. SAMPLES WITH TWO VALUES INDICATE TOTAL CHROMIUM/HEXA-VALENT CHROMIUM (mg/kg).
2. SAMPLES WITH ONE VALUE INDICATE TOTAL CHROMIUM
3. ND = NOT DETECTED
4. PROPOSED BORING LOCATIONS ARE APPROXIMATE. FINAL BORING LOCATIONS MAY BE MODIFIED BASED ON SPACING AND ACCESS REQUIREMENTS FOR THE DRILL RIG, AND/OR TO AVOID OVERHEAD UTILITIES AND/OR UNDERGROUND STRUCTURES AND CONVEYANCES.
5. ALL TIER II PROPOSED BORING LOCATIONS ON THIS FIGURE WILL BE SAMPLED FOR BOTH TOTAL AND HEXAVALENT CHROMIUM.

**LEGEND**

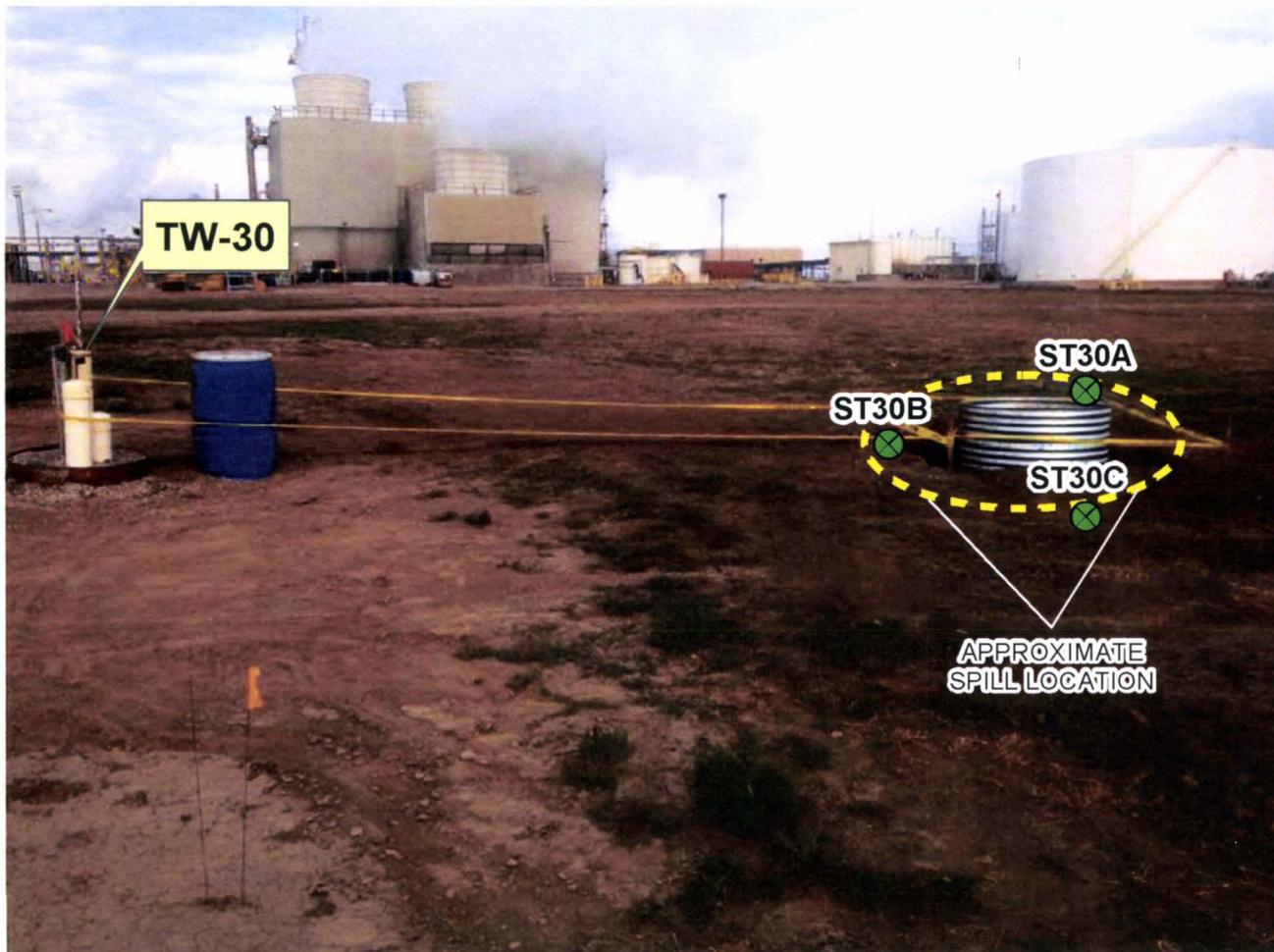
- TIER II SOIL SAMPLE FOR TOTAL AND HEXAVALENT CHROMIUM
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM > 20 mg/kg
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg
- TOTAL CHROMIUM > 20.1 mg/kg AND HEXAVALENT CHROMIUM NOT SAMPLED
- TOTAL CHROMIUM ≤ 20.1 mg/kg AND HEXAVALENT CHROMIUM ≤ 20 mg/kg OR NOT SAMPLED

**TOTAL CHROMIUM AND  
HEXAVALENT CHROMIUM  
SAMPLE LOCATIONS  
IN SOIL 8-10 FT  
EAST STUDY AREA**

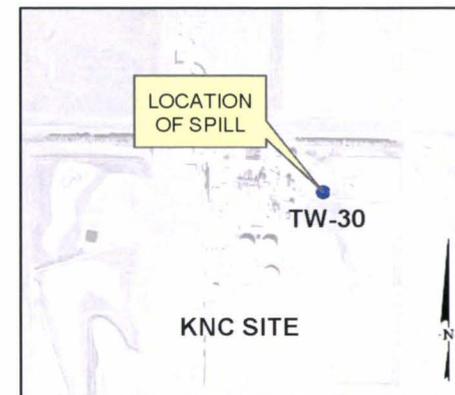
PREPARED BY:



PROJECT.	FIGURE NO. C-22
DATE. DECEMBER 2012	FILE NO.



TW-30 SPILL AREA AND PROPOSED SAMPLE LOCATIONS  
LOOKING WEST



LEGEND

- X PROPOSED SAMPLE LOCATION FOR NITRATE+NITRITE (as N), TOTAL CHROMIUM, AND HEXAVALENT CHROMIUM

**SAMPLING LOCATIONS FOR INVESTIGATION SPILL NEAR WELL TW-36**

PREPARED BY:		 KOCH NITROGEN COMPANY 11559 US HIGHWAY 50 - P.O. BOX 1307 DODGE CITY, KS 67801	
PROJECT NO.	FIGURE NO.	F-11	
DATE: DECEMBER 2012	FILE NO.		

**APPENDIX E**

**TABLE REPLACEMENT PAGES**

**Table 1**  
**Proposed Sample Location, Depth, and Analytical Summary**  
**Phase III Soils Work Plan**

SWMU/AOC Number/Name	Boring ID	Depth (FT BGS)																Analyses/Test Methods
		0-0.5	0.5-2	2-4	4-6	6-8	8-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	
West Study Area																		
SWMU 1/South Pond	S1A	C SO	C SO	N C SO	N SO	N SO	N SO	N SO	N SO	N	N							
	S1B	C SO	C SO	N C SO	N SO	N SO	N SO	N SO	N SO	N	N	N						
	S1C	SO	SO	N SO	N SO	N SO	N SO	N SO	N SO	N	N	N	N	N				
	S1D	SO	SO	N SO	N SO	N SO	N SO	N SO	N SO	N	N	N	N	N				
	S1E	SO	SO	N SO	N SO	N SO	N SO	N SO	N SO				N	N				
		N	N	N	N	N	N	N	N	N	N	N	N	N	N			
	S1G	N	N	N														
	S1H	N	N	N	SO	SO	SO	SO	SO									
	S1I	N	N	N														
	S1J	N SO	N SO	N SO	SO	SO	SO	SO	SO									
	S1K(Deep)	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C	N C	N C	N C	N C	N C	N C	N C	
	S1L	N	N	N	C	C	C	C										
	S1M		N	N	N SO	N SO	N	N	N	N	N	N	N	N				
	S1CB1	C	C	C	C	C	C											
	S1CB2	C	C	C	C	C	C											
S1CB3	C	C	C	C	C	C												
S1CB4	C	C	C	C	C	C												
S1CB5	C	C	C	C	C	C												

Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)

Notes:  
 FT BGS - feet below ground surface  
 N - Depth where Nitrate + Nitrite as N analysis is proposed  
 C - Depth where total and hexavalent chromium analyses are proposed  
 SO - depth where sulfate analysis is proposed  
 VOC - Depth where VOC analysis is proposed  
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		0-0.5	0.5-2	2-4	4-6	6-8	8-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60		
SWMU 2/North Pond AOC-3/Sanitary Sewage Lagoon	S2A	N SO	N SO	N SO	N SO	SO	SO	N SO	N C SO	N C	N	N						Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F), total chromium (EPA 60108), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)	
	S2B	N C SO	N SO	N SO	N SO	SO	SO	SO	SO										
	S2C	N C SO	N C SO	N SO	N SO	N SO	N SO	N SO	N SO	N	N	N	N	N					
	S2D	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N SO	N SO	N	N	N	N	N				
	S2E			N	N	N	N	N	N	N	N	N							
	S2F	C SO	N C SO	N C SO	N C SO	N SO	N SO	N SO	N SO	N SO									
	S2G	C SO	C SO	N C SO	N C SO	N SO	N SO	N SO	N SO	N SO	N	N							
	S2H			N	N C	N C	N C	N	N	N	N	N	N	N					
	S2I	N SO	N SO	N SO	N SO	N SO	N SO	N SO	SO	C	C	N	N	N	N				
	S2J	C	C	C	C	C	C	N C	N	N	N C	N C	N	N					
	S2K (Deep)	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N C	N C	N C	N C	N C	N C	N C		N C
	S2L(Deep)	N SO	N SO	N SO	N SO	N SO	N SO	N SO	N SO	N SO	N	N	N	N	N	N	N		N
	S2M	SO	SO	SO	SO	SO	SO	SO	SO	SO									
	S2O		N	N	N														
S2P	N																		

Notes:  
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**Phase III Soils Work Plan**

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SWMU 5/ Landfarm	S5A	C SO	C SO	N C SO	N C SO	N C SO	N C SO	C SO	C SO	C	C	C	C					Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)
	S5B	C SO	C SO	C SO	C SO	C SO	C SO	SO	SO									
	S5C	C SO	C SO	C SO	C SO	C SO	C SO	C SO	SO									
SWMU 12/Disposal Area (N of S Pond)	S12A	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	N SO	N SO	N	N							Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)
SWMU 19/ West Lime Sludge Industrial Landfill	S19A	N C SO	N C SO	N C SO SVOC	N C SO SVOC	N C SO SVOC	N SO SVOC	SO	SO									Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), sulfate (EPA 9056) and semi-volatile organic compounds (EPA 8270C)
	S19B	SO	SO	SO SVOC	SO SVOC	SO SVOC	SO SVOC	SO	SO									
SWMU 21 / UIC Well #2 Cuttings	S21A				C	C	C	C										Soil (surface and subsurface samples) analysis for total chromium (EPA 6010B) and hexavalent chromium (EPA 7196)

Notes:  
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 N - Depth where Nitrate + Nitrite as N analysis is proposed  
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**Proposed Sample Location, Depth, and Analytical Summary**  
**Phase III Soils Work Plan**

SWMU/AOC Number/Name	Boring ID	Depth (FT BGS)																Analyses/Test Methods
		0-0.5	0.5-2	2-4	4-6	6-8	8-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	
East Study Area																		
SWMU 3 / East Pond	S3A		C SO	N C SO	N C SO	N C SO	N C SO	C SO	N SO	N	N							Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)
	S3B	C SO	C SO	C SO	SO	SO	SO	SO	SO									
	S3C	C	C	C														
	S3D	C	C															
	S3E	C		C														
	S3F	SO	SO	SO	SO	SO	SO	SO	SO	SO								
	S3G		SO	SO	SO	SO	SO	SO	SO	SO								
	S3H	SO	SO	SO	SO	SO	SO	SO	SO	SO								
	S3I				SO	SO	SO	SO	SO	SO								
	S3J	SO	SO	SO	SO	SO	SO	SO										
	S3CB1	C	C	C	C	C	C	C										

Notes:  
 FT BGS - feet below ground surface  
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**Phase III Soils Work Plan**

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		0-0.5	0.5-2	2-4	4-6	6-8	8-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	
SWMU 10 / East Cell Lime Sludge Landfill	S10A	SO	N C SO	N C SO	N C SO	SO	SO	SO	SO									Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500N03-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)
	S10B	C SO	C SO	N C SO	N C SO	N C SO	N C SO	C SO	C SO	C	C	C	C					
	S10C	C SO	C SO	N C SO	N C SO	N C SO	N C SO	C SO	C SO	C	C	C	C					
SWMU 11 / West Cell Lime Sludge Landfill	S11A	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	SO	SO									Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500N03-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)
	S11B	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	SO	SO									
	S11C	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	SO	SO									
	S11D	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	SO	SO									
	S11E	C SO	C SO	C SO	C SO	N C SO	N C SO	N SO	N SO	N	N	N						
	S11F	N C SO	N C SO	N C SO	N C SO	N C SO	N C SO	SO	SO									
SWMU 17 / East Lime Sludge Landfill	S17A	C SO	N C SO	N C SO	N C SO	N C SO	N C SO	SO	SO									Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500N03-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), and sulfate (EPA 9056)
	S17B	C SO	N C SO	N C SO	N C SO	N C SO	N C SO	C SO	C SO	C								
	S17C	C SO	C SO	C SO	C SO	C SO	C SO	C SO	C SO	C								

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		0-0.5	0.5-2	2-4	4-6	6-8	8-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	
Central Processing Study Area																		
AOC 1 / Chromate Spills	A1A	N C	N C	N C	N C	N	N	N	N	N	N	N	N	N				Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total chromium (EPA 6010B) and hexavalent chromium (EPA 7196)
	A1B	N C	N C	N C	N C	N	N	N	N	N	N	N	N	N				
	A1C	N C	N C	N C	N C	N	N	N	N	N	N	N	N	N				
	A1D	N C	N C	N C	N C	N	N	N	N	N	N	N	N	N	N	N	N	
	A1E	C	C	C	C	C	C	C	C									
	A1F	N C	N C	N C	N C	N	N	N	N	N	N	N	N	N				
	<sup>1,2</sup> A1GDEEP	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
SWMU 8 / Former Chrome Destruct Unit	S8A		C	C	C	C	C										Soil (surface and subsurface samples) analysis for total chromium (EPA 6010B), and hexavalent chromium (EPA 7196)	
SWMU 14 / Settling Basin by Chromium Treatment Building	S14A	N C	N C	N C	N C	N C	N										Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) and total chromium (EPA 6010B), and hexavalent chromium (EPA 7196)	
	S14B	N C	N C	N C	N C	N C	N											
	S14C	N C	N C	N C	N C	N C	N											

Notes:

<sup>1</sup>Boring A1GDEEP will be advanced to the top of the Granerous. Total and hexavalent chromium analyses will be performed with depth until the water table is encountered.

<sup>2</sup> Well cluster installation will be performed in accordance with the Phase II RFI Work Plan Addendum: Groundwater Characterization (KNC, 2010b)

FT BGS - feet below ground surface

N - Depth where Nitrate + Nitrite as N analysis is proposed

C - Depth where total and hexavalent chromium analyses are proposed

SO - depth where sulfate analysis is proposed

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		0-0.5	0.5-2	2-4	4-6	6-8	8-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	
<b>Central Storage Study Area</b>																		
AOC 5 / UAN Tank Leak Area	A5A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Soil (surface and subsurface samples) analysis for nitrate/nitrite (EPA SM4500N03-F)
	A5B	N	N	N	N	N	N											
	A5C	N	N	N	N	N		N	N		N	N	N	N	N	N	N	
	A5D	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	A5E	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	A5F			N	N													
	A5G			N	N	N	N											
	A5H			N	N	N	N											
SWMU 7 / Landfill for General Plant Trash	S7A	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	C SO VOC	C VOC										Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500N03-F), total chromium (EPA 6010B), hexavalent chromium (EPA 7196), sulfate (EPA 9056) and volatile organic compounds (EPA 8260B)
	S7B	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	C SO VOC	C VOC										
	S7C	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	C SO VOC	C VOC										
	S7D	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	C SO VOC	C VOC										
	S7E	C VOC	C VOC	C VOC	C VOC	C VOC	C VOC	C VOC										
	S7F	C VOC	C VOC	C VOC	C VOC	C VOC	C VOC	C VOC										
	S7G	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	N C SO VOC	C SO VOC	C VOC										
	S7H	VOC	VOC	VOC	VOC	VOC	VOC	VOC										
	S7I	VOC	VOC	VOC	VOC	VOC	VOC	VOC										
	S7J	SO VOC	SO VOC	SO VOC	SO VOC	SO VOC	SO VOC	VOC										

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SWMU/AOC Number/Name	Boring ID	Depth (FT BGS)														Analyses/Test Methods	
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<b>Additional Spill Areas</b>																	
TW-89 Spill Area	S89A	N C	N C	N C	N C												Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) and total chromium (EPA 6010B), AND hexavalent chromium (EPA 7196)
TW-83 Leakage	S83A	N C	N C	N C	N C												Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) and total chromium (EPA 6010B), and hexavalent chromium (EPA 7196)
	S83B	C	C	C	C												
	S83C	C	C	C	C												
TW-85/TW-67 Pipeline	S85A	C	C	C	C												Soil (surface and subsurface samples) analysis for total chromium (EPA 6010B), and hexavalent chromium (EPA 7196)
	S85B	C	C	C	C												
	S85C	C	C	C	C												
	S85D	C	C	C	C												
	S85E	C	C	C	C												
TW-86	S86A	N C	N C	N C	N C												Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) and total chromium (EPA 6010B), and hexavalent chromium (EPA 7196)
	S86B	N C	N C	N C	N C												
	S86C	N C	N C	N C	N C												
	S86D	N C	N C	N C	N C												
	S86E	N C	N C	N C	N C												
	S86F	N C	N C	N C	N C												
	S86G	N C	N C	N C	N C												

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TW-82 Line Break	S82A	N C	N C	N C	N C													Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total Cr (EPA 6010B), and hex Cr (EPA 7196)
	S82B	N C	N C	N C	N C													
	S82C	N C	N C	N C	N C													
	S82D	N C	N C	N C	N C													
TW-85	S85F	N C	N C	N C	N C													Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total Cr (EPA 6010B), and hex Cr (EPA 7196)
	S85G	N C	N C	N C	N C													
	S85H	N C	N C	N C	N C													
TW-19	ST19A	N C	N C	N C	N C													Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total Cr (EPA 6010B), and hex Cr (EPA 7196)
	ST19B	N C	N C	N C	N C													
	ST19C	N C	N C	N C	N C													
	ST19D	N C	N C	N C	N C													
TW-36	S36A	N C	N C	N C	N C													Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total Cr (EPA 6010B), and hex Cr (EPA 7196)
	S36B	N C	N C	N C	N C													
	S36C	N C	N C	N C	N C													
	S36D	N C	N C	N C	N C													
	S36E	N C	N C	N C	N C													
TW-01A Line Break	ST1A	N C	N C	N C	N C													Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total Cr (EPA 6010B), and hex Cr (EPA 7196)
	ST1B	N C	N C	N C	N C													
	ST1C	N C	N C	N C	N C													
	ST1D	N C	N C	N C	N C													
TW-01A Coupling Leak	ST1E	N C	N C	N C	N C													Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total Cr (EPA 6010B), and hex Cr (EPA 7196)
	ST1F	N C	N C	N C	N C													
	ST1G	N C	N C	N C	N C													
	ST1H	N C	N C	N C	N C													
	ST1I	N C	N C	N C	N C													
TW-30	ST30A	N C	N C	N C	N C													Soil (surface and subsurface samples) analysis for: nitrate/nitrite (EPA SM4500NO3-F) total Cr (EPA 6010B), and hex Cr (EPA 7196)
	ST30B	N C	N C	N C	N C													
	ST30C	N C	N C	N C	N C													

Notes:  
 FT BGS - feet below ground surface  
 N - Depth where Nitrate + Nitrite as N analysis is proposed  
 C - Depth where total and hexavalent chromium analyses are proposed  
 SO - depth where sulfate analysis is proposed  
 VOC - Depth where VOC analysis is proposed  
 SVOC - Depth where SVOC analysis is proposed

**Table 2**  
**Information on Additional Spill Areas**  
**Phase III Soils Work Plan**

Release Name	Description of Release	Field Work Completed	Previous Sample Locations	Summary Findings	Conclusions/Proposed Path Forward
Pipe Fracture	Pipe Fracture in Northeast portion of site	1Q07	PF-01 through PF-04	-Maximum Cr detected = 18.0 mg/kg (below site background) -Maximum Nitrate detected = 32.0 mg/kg (below KDHE action level for soils)	-No further assessment proposed
Pipe Union Failure	Pipe Union Failure in northeast portion of site	1Q07	UF-01 through UF-07	-Maximum Cr detected = 18.4 mg/kg (below site background) -Nitrate detected above background and KDHE Action levels at UF-02 (2 ft bgs)	-No further assessment proposed for Cr; - Nitrate delineation as part of proposed site-wide delineation borings (S10B, S10C and S3A) (Attachment B and Table 1)
Andco Clarifier Basin Overflow	Basin overflow noted during routine operations.	1Q07	AO-01 through AO-07	-Cr above background detected in 1 sample (AO-02 [1.0 ft bgs] = 24.9 mg/kg) -Several samples with Nitrate above background and KDHE action level (40 mg/kg) for soils below 8 inches in depth; however, all samples were below the KDHE 85 mg/kg level for soils in the upper 8 inches	3 borings (S14A, S14B, S14C) proposed as part of site-wide delineation activities (Table 1, Nitrate - Attachment B ;Chromium - Attachment C)
Pipeline Between TW-85 and TW-76	Servi-Tech Labs struck KNC's groundwater recovery header approximately 350 feet south of TW-85	6/23/2010	TW-85/76-01 through TW-85/76-10	-Cr above site background at locations TW-85/76-02 through TW-85/76-10 at the 2 ft bgs interval -Maximum Nitrate detected = 17 mg/kg below KDHE action level for soils	- 2 borings (S85A and S85B) for vertical Cr delineation and 3 borings (S85C through S85E) for horizontal delineation (Table 1 and Figure F-1); - No further assessment for Nitrate proposed
TW-83 Leakage	Surface area impacted by leakage at TW-83 is estimated at approximately 1200 sq. ft.	6/23/2010	TW83-SB01 through TW83-SB09	-Cr above site background at locations TW83-SB01, TW83-SB02, TW83-SB03, TW83-SB07, and TW83-SB08; -Nitrate exceeded KDHE action level at one location: TW83-SB01 (2.0 ft bgs)	-3 additional borings (S83A, S83B, and S83C) to vertically delineate Cr and Nitrate (Tables 1 , Figure F-2)
TW-28 Valve Malfunction	Leaking valve noted during preparation for quarterly sampling	4Q07	TW-28-01 through TW-28-18	-See TW-28 (2nd Leak) below	-See TW-28 (2nd Leak) below
TW-28 (2nd Leak)	High winds blew tumbleweeds into valve stem and handle and caused the valve to open	6/23/2010	TW-28-19 through TW-28-25	-Cr detected above site background at numerous locations -Nitrate detected above KDHE action level at 3 locations	-3 borings (S11A, S11C, S11F) as part of sitewide delineation activities near SWMU 10 (Attachments B and C and Table 1 )
TW-86	During March 2011, approximately 450 gallons of recovered groundwater released to ground during maintenance on TW-86	None to Date	NA	- No investigation to date	-Seven borings (S86A through S86G) for Cr and Nitrate delineation (Tables 1 Figure F-3)
Recovered Water Release at Well TW-89	Tumbleweed impacted above-ground valve appurtenance at TW-89, causing about 50 gallons of recovered groundwater to be released to ground	6/23/2010	TW-89-01 through TW-89-04	-Cr above site background at two locations: TW-89-01 (0.5 ft bgs) and TW-89-02 (2.0 ft bgs) -Nitrate above KDHE action level at two locations: TW-89-02 (1.0 and 2.0 ft bgs) and TW-89-03 (1.0 ft bgs)	-Based on extent of water release, additional samples for horizontal delineation not proposed; -Sample location S89A (Figure F-4) for vertical delineation
TW-82 Line Break	~200 gallons of untreated groundwater released from a line break east of TW-82	None to Date	NA	- No investigation to date - Wet area was hydroexcavated and properly disposed of off-site	Four borings (S82A, S82B, S82C, and S82D) for Cr and Nitrate delineation (Figure F-5 and Table 1)
TW-85	~120 gallons of untreated groundwater was released from recovery well	None to Date	NA	- No investigation to date	Three borings (S85F, S85G, and S85H) for Cr and Nitrate delineation (Figure F-6 and Table 1)
TW-19	~200 gallons of recovered groundwater released due to a leak at a valve connection	None to Date	NA	- No investigation to date - Wet area was hand excavated and properly disposed of off-site	Four borings (ST19A, ST19B, ST19C, and ST19D) for Cr and Nitrate delineation (Figure F-7 and Table 1)
TW-36	~1,100 gallons of untreated groundwater were released from the recovery well piping near TW-36	None to Date	NA	- No investigation to date - Wet area was hydroexcavated and properly disposed of off-site	Five borings (S36A, S36B, S36C, S36D, and S36E) for Cr and Nitrate delineation (Figure F-8 and Table 1)
TW-01A Line Break	~200 gallons of untreated groundwater released from recovery piping east of TW01A	None to Date	NA	- No investigation to date - Wet area was hydroexcavated and properly disposed of off-site	Four borings (ST1A, ST1B, ST1C, and ST1D) for Cr and Nitrate delineation (Figure F-9 and Table 1)
TW-01A Coupling Leak	~1,200 gallons of untreated groundwater was released from a leak in a coupling on the recovery well piping of TW-01A	None to Date	NA	- No investigation to date - Wet area was hydroexcavated and properly disposed of off-site	Five borings (ST1E, ST1F, ST1G, ST1H and ST1I) for Cr and Nitrate delineation (Figure F-10 and Table 1)
TW-30	~400 gallons of recovered groundwater released at recovery well piping/header near TW-30.	None to Date	NA	- No investigation to date - Wet area and approximately 375 gallons of water was hydroexcavated and properly disposed of off-site	Three borings (ST30A, ST30B, ST30C) for Cr and Nitrate delineation (Figure F-11 and Table 1)

Notes:  
NA - Not applicable; investigation not previously performed in this area.  
mg/kg - milligrams per kilogram  
Cr - chromium